Comparative Review: Online Office Suites p. 19 ■ Market Watch: Group Policy Tools p. 25

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THE SOUL OF WINDOWS SERVER 2008

- Server Core and Hyper-V p. 29
- AD Enhancements p. 35
- Volume Activation p. 41

A candid conversation with Microsoft's Bill Laing

VISTA AND XP

Manage User Data and Settings p. 47

8 More Free Utilities p. 51

REQUIRED READING

Malware Protection Gems p. 65

PowerShell: Pipelines and Output p. 59

OFFICE AND SHAREPOINT PRO

Dan Holme's Office Tips p. 71

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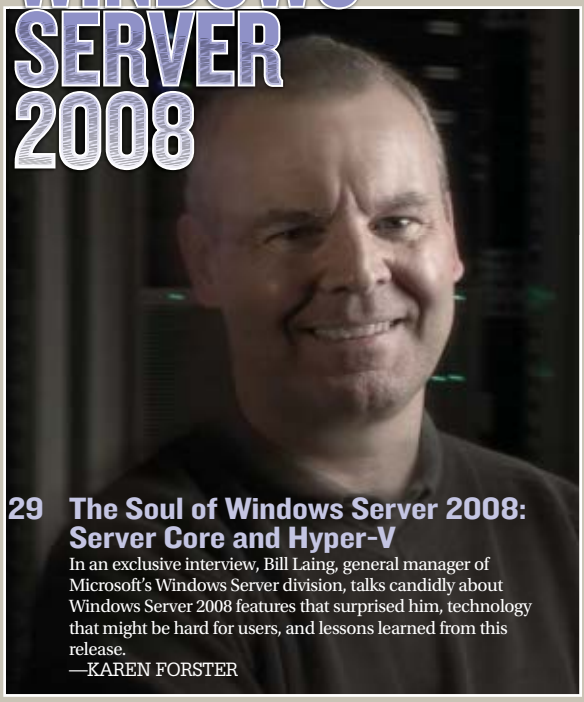

29 The Soul of Windows Server 2008: Server Core and Hyper-V
In an exclusive interview, Bill Laing, general manager of Microsoft's Windows Server division, talks candidly about Windows Server 2008 features that surprised him, technology that might be hard for users, and lessons learned from this release.
—KAREN FORSTER

35 Active Directory Enhancements in Windows Server 2008
Take a tour through the changes and enhancements in Windows Server 2008 Active Directory (AD). In particular, examine the new read-only domain controller (RODC), and learn how it can help lower risks to your organization.
—GUIDO GRILLENMEIER
Windows Server 2008 Editions Supporting RODCs 35
Names for AD Services Change in Windows Server 2008 36

41 Volume Activation in Windows Server 2008
VA2 uses Multiple Activation Keys (MAKs) or Key Management Service (KMS) hosts to activate systems in midsized and large organizations, eliminating the security and administrative problems of Volume License Keys (VLKs).
—SEAN DEUBY

WEB EXCLUSIVE

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Avoid Windows Server 2008 Integration Challenges
Only hard-won experience can expose pitfalls that can cause frustration when you deploy a new OS. Before you implement Windows Server 2008, benefit from an expert's lessons-learned about integration with AD, compatibility with Microsoft server applications, virtualization, backup, and antivirus and antispyware.
—ALAN SUGANO
InstantDoc ID 98197

FEATURES

47 Best Practices for Managing User Data and Settings, Part 2
For the client side of the equation, let's look at unifying UDS management for Vista and XP users and addressing four key types of UDS: "normal data," "normal settings," "locally accessed data," and "unwanted data."
—DAN HOLME

51 Yet Another 8 Absolutely Cool, Totally Free Utilities
Once again, we've combed the Web for a new and scintillating collection of free tools that promise to make your job easier. Get $500 worth of tools for nothing—except the time necessary to download them.
—DOUGLAS TOOMBS

59 PowerShell 101, Lesson 2
PowerShell lets you create pipelines that link cmdlets together to perform complex operations and refine retrieved information. Learn how to use a pipeline to create PowerShell statements and how to format and sort output from those statements.
—ROBERT SHELDON
How to Handle Long PowerShell Statements 62

REQUIRED READING: SECURITY

65 Vista and Server 2008 Malware Protection Gems
Understand Data Execution Protection (DEP) and Address Space Layout Randomization (ASLR)—two defenses in Windows Server 2008 and Windows Vista that help you secure your system against attacks that use buffer overruns.
—JAN DE CLERCQ

OFFICE & SHAREPOINT PRO

71 Getting to Know Office 2007
Microsoft Office 2007 tips help you use forms-based authentication with Office and SharePoint, remove Excel duplicates, set Recycle Bin settings in SharePoint, and more.
—DAN HOLME

TRICKS & TRAPS

13 Reader to Reader
Add file extensions to GPOs with ADSI Edit, troubleshoot locked-out accounts, and fight spam and phishing attacks by adding SPF records to your DNS entries.

75 Ask the Experts
Learn about Microsoft Update Catalog 7.0, find out how to keep your system secure with Live OneCare, and learn how to clear the Outlook auto-complete address cache.

WEB EXCLUSIVE

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IT PRO HERO

Testing Windows Server 2008
This month's IT Pro Hero, Arlin Sorensen, CEO for Heartland Technology Solutions, discusses his company's experiences testing Server 2008 and the benefits he expects to gain from the upgrade.
—ANNE GRUBB
InstantDoc ID 98122

COVER PHOTO BY DAVIS FREEMAN

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COLUMNS

7

Karen Forster

IT Pro Perspective

Open Source and Windows Server's Direction
Bill Hilf's open-source background has helped Microsoft gain new direction, as a "platform" company with a compatible set of end-to-end technologies.

Mark Minasi

Windows Power Tools

Decommission Old Computers with Cipher
Leverage EFS to overwrite the hard disks of decommissioned systems.

Michael Otey

Top 10

Free Virtualization Utilities
These free tools will help you convert physical systems to VMs, change VMware VMs to Microsoft VMs (and vice versa), and perform other tasks to help you manage your virtual environments.

15 New & Improved
Check out the latest products to hit the marketplace.
PRODUCT SPOTLIGHT: FalconStor Software's **virtual tape library (VTL) storage solutions**

16 Industry Bytes
Jason Bovberg shares insights from his chat with LANdesk, while Todd Erickson discusses trends in mobile device management.

17 REVIEW
Paul's Picks
Apple **iPhone** and Mac OS X **"Leopard"** updates prove Apple can still deliver—but there's room for improvement, Paul says.
—PAUL THURROTT

17 REVIEW
O&O Defrag 10 Professional Edition
This disk-defragmentation tool offers five defragmentation methods to help you organize and optimize your hard disks.
—JEFF JAMES

17

18 REVIEW
Specops Password Policy
A password policy enforcer from Special Operations Software lets you set multiple password policies without the need for multiple domains—which can help you keep your Active Directory (AD) forest slim and trim.
—ERIC B. RUX

19 COMPARATIVE REVIEW
Online Office Suites
Are online office suites from ThinkFree, Zoho, Ajax, Silveroffice, and Google viable replacements for Microsoft Office?
—JEFF JAMES
Microsoft Office Live Workspace: A Winning Strategy?.....22

25 MARKET WATCH
Group Policy Tools: Easing the Pain
Group Policy helps you centrally configure and manage computers and remote users in your Active Directory (AD) environment. Microsoft's new Group Policy Preferences and ISV products will make it increasingly useful to more organizations.
—CAROLINE MARWITZ

88

WHAT'S HOT

78 Readers Review Hot Products
Readers highlight their favorite products from Ensim, AppDev, and Unitrends.
—JEFF JAMES

Dennis Podgorski, IT manager

78

IN EVERY ISSUE

4

4 Connecting the IT Community
4 Your Savvy Assistant
10 letters@windowsitpro.com
87 Directory of Services
87 Advertising Index
87 Vendor Directory
88 Ctrl+Alt+Del

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The Missing Link to IT Resources

BY CHRISTAN HUMPHRIES

Look Who's Talking (and Chatting and Surfing)

I confess. Sometimes my in-office IM conversations don't pertain to work, and *maybe* I check my personal email once in a while. But my responsibilities come first, and I always get my work done. So why am I freaked out that my employer could be watching my every move?

Monitoring employees' computer activities isn't anything new and, as forum member rain3d states, is a company's right as long as it's "understood by the employee in a written acceptable use policy (signed by employee) that the computers are for business use only and subject to monitoring" (www.windowsitpro.com/go/MonitorEmail).

Even if snooping on worker bees is legal, many people still feel that such actions are an invasion of privacy. Others think that surveillance is the only way to keep a business running efficiently. I agree that people should *work* while they're at work; I just don't remember when keeping employees scared became the only way to keep them honest.

Do you think that monitoring employees' computer activity is fair or that it's gone too far? Share your thoughts on my extended blog post at InstantDoc ID 98056, or email me at Christan.Humphries@penton.com.

IM at Work

IM is an essential communication tool for many businesses, but with its efficiency can also come security risks. Keep your IM traffic safe with these helpful resources:

- "IM Risk Management for Enterprise," www.windowsitlibrary.com/Content/1802/06/toc.html
- "IM Security Primer," InstantDoc ID 24665

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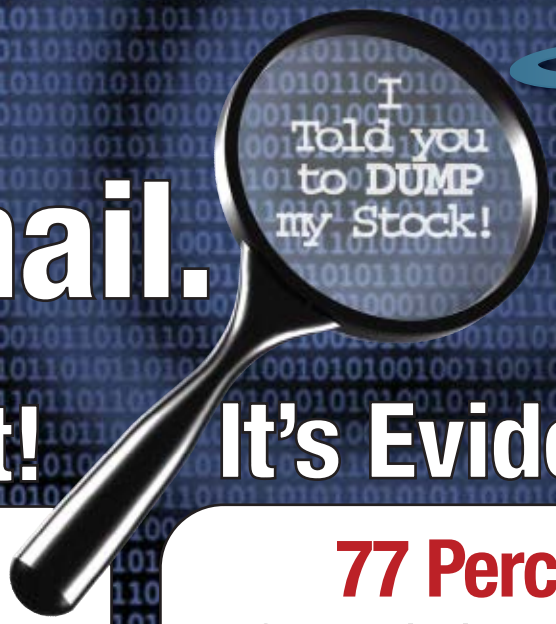

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Open Source and Windows Server's Direction

Institutionalizing interoperability

The unfortunate tagline for the launch of Windows Server 2003 was "Do more with less." Microsoft never comprehended the irony of that tagline—but it strikes me as fitting the company's mood five years ago. Competition from Linux had Microsoft nearly paralyzed. The company seemed to be desperately seeking direction. Now, in 2008, Microsoft has found a direction—thanks in large part to the people the company hired away from the Linux world.

In February 2004, Microsoft hired Bill Hilf from IBM. According to his official biography, Hilf "led IBM's Linux/Open Source Software technical strategy at a world-wide level for the Emerging and Competitive markets organization." Hilf's mission at Microsoft was to establish a Linux lab. Starting as one server under Hilf's desk, the lab has flourished and expanded—and Hilf's Microsoft career has rocketed. Hilf is now "General Manager of Platform Strategy, driving Microsoft's platform strategy efforts across the company. Bill's primary focus is to champion platform initiatives … while leading long-term strategy planning in the Windows Server and Tools organization." That's a big change in a position that was, before Hilf, titled simply "General Manager of Windows Server Marketing." And this change signals a reinvigorated sense of direction.

The key descriptor for Microsoft's newfound direction is the now-ubiquitous word "platform."

The P Word

The key descriptor for Microsoft's newfound direction is the now-ubiquitous word "platform." How is the concept of Windows as a platform connected with Hilf's open-source background? I talked to Sam Ramji, director of Platform Technology Strategy, who reports directly to Hilf and oversees Microsoft's Open Source Software Lab, and the Microsoft and Novell Interoperability Lab in Cambridge, Mass.

Ramji spoke of insights from the Open Source Software Lab that are key to Microsoft's new focus: "We started having a bigger conversation, which included not just how do we bridge gaps with Linux, how do we compare to and compete with Linux, but how do we look at open source? It's a greater phenomenon than operating systems. It's really about how developers communicate, about how developers improve technology, and a different way for users to adopt technology."

Most important for Microsoft's concept of its own business is the idea that the OS is only a piece of the puzzle, which also includes all the technologies necessary to create business solutions. By thinking of itself as a "platform" company that has a compatible set of end-to-end technologies, Microsoft puts itself in a powerful position. Not only are there hundreds (if not thousands) of Linux permutations, but also a huge variety of technologies and applications are necessary to make an open-source business solution feasible—and all the pieces aren't necessarily compatible. Ramji said, "There's OS X, Linux, FreeBSD, Windows, Solaris, AIX, Oracle, SQL, MySQL, Postgres—there's whole bunch of technologies underneath it that may power it in some way. How does all this stuff mix?"

If Microsoft takes on the task of making all the technologies work together, the company's competitive position becomes unmatched. This thinking is at the heart of what Ramji calls Microsoft's decision to "institutionalize interoperability." Microsoft realized it can make money by supporting non-Microsoft technologies. Ramji even sees the future of Windows Server as being a platform for Linux in virtual environments. "We've always had a technological grounding, but we've added a business focus. Collectively, we [i.e., Hilf's open-source team] have gone from strategists and agitators to business owners. So interoperability is not just a good idea—it's actually the business strategy. I think that shows a lot of Hilf's rising star in the company—that institutionalizing interoperability that's happening. It says a lot that Bob Muglia and Steve Ballmer would look at Bill and say, 'This is the kind of leader we want to have in charge of our $4.5 billion growth business.'"

Institutionalizing Interoperability

Hilf's influence and recognition of virtualization's power to open new possibilities will guide the upcoming version of Windows. Linux has gone from a source of fear, to a source of optimism, which is even reflected in the Windows Server 2008 tagline: "Heroes happen here." (OK, I admit it's a typically lame Microsoft tagline. But you have to agree that it's more positive than "Do more with less." And don't even get me started on how you could interpret "institutionalizing interoperability"….)

InstantDoc ID 98111

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How to Protect and Improve System Performance

The Top 10 Points to Know about Fragmentation

IT professionals are heroes of the workplace. Whether with cunning wit or a Phillip's head screwdriver, they solve most any computer emergency. However, keeping a computer running at top speed is usually preventative maintenance instead of last-minute, adrenaline-surging, virus-vaccinating heroics.

Here are 10 key points to maintain peak performance across any network:

1. The hard-disk is the slowest part of any system.

Say you are operating a 2.5 GHz processor. That's 2.5 billion operations every second.

A large number of hard disks only spin at 7200 rotations per minute, or 120 cycles per second, or 120 Hz. This means your CPU is more than 20 million times faster than the hard disk. The hard disk still has mechanical components. Think *Terminator 2*®, when a mechanized Schwarzenegger is outclassed by the faster, smarter T-1000. When the slowest part of your computer is making unnecessary reads, the entire system is dragged down.

2. Fragmentation has severe effects.

It's more than sluggish and crawling computer speeds; fragmentation leads to crashes, hangs, data errors, file corruption and boot-time failures. Files that suffer fragmentation are more difficult and take longer to back up. When systems are thoroughly defragmented, they run faster and more reliably—period.

3. Real-time defragmentation is necessary.

Many companies rely on 24/7, mission-critical servers. Taking these systems offline for maintenance is not an option. But, having a server with I/O bottlenecks is also not an option. Only real-time, invisible defragmentation fixes this catch-22 situation.

4. Give your systems faster-than-new speeds.

NTFS best-fit attempts for file placement on hard drives are limited. Diskeeper® 2008 comes with a new technology called

I-FAAST™ (Intelligent File Access Acceleration Sequencing Technology)[1] that re-sequences your files. So, in addition to consolidating free space, defragmenting with Diskeeper boosts access to your most frequently used files by as much as 80%. I-FAAST gives systems faster-than-new speeds.

5. Servers are especially susceptible.

While disk striping improves physical I/O capacity and performance, RAID and SAN systems simply do not fix fragmentation where it begins—at the file system. Enormous volumes with heavy read/write activity lead to astronomical fragmentation rates, making RAID and SAN work harder

than they should. The efficiency of RAID and SAN may lessen some of the physical effects of fragmentation, but fragmentation is never eliminated. You'll need to buy more and more equipment to compensate. Sooner or later, the tortoise catches the hare, and your system suffers I/O bottlenecks and slow server speeds.

6. Operate without interrupting productivity.

The new InvisiTasking™ technology makes software transparent. Diskeeper 2008 with InvisiTasking will work invisibly in the background; only using untapped resources. Systems are continually improved without any management or impact on a system's usability.

7. Defragment despite minimal free space.

The purpose of defragmentation is to restore lost speed and performance. A defrag engine must be able to operate in limited free space because drives with extremely limited free space are the ones in need of the most help. Diskeeper 2008 handles millions of fragments and can function with as little as 1% free space.

8. Stop fragmentation before it happens.

Diskeeper 2008 comes with Frag Shield™ 2.0, a technology that automatically defends against fragmentation of critical system files. Frag Shield 2.0 prevents crash-inducing fragmentation. It's like Superman® saving the day—two days before there's a problem.

9. Auto-defrag breathes life into systems.

It keeps systems at optimum speeds and eliminates fragmentation-related performance issues. Thoroughly defragging systems adds 2–3 years onto the hardware's useful life.[2]

10. Analyze your network's performance.

Poor performance on a remote system can easily be mistaken for a slow network. Get Disk Performance Analyzer for Networks™. This free utility scans networked systems for fragmentation. See for yourself how fragmentation is affecting your systems. This groundbreaking program will provide comprehensive reports on how system speeds will improve with thorough defragmentation. Visit www.diskeeper.com/w11 and get this free, must-have utility.

Diskeeper 2008 is the only fully-automated defragmentation program. It operates invisibly in the background and it dynamically adapts defragmentation strategies to fit the needs of individual volumes. With new defrag engines, Diskeeper 2008 restores performance on volumes with as little as 1% free space. Get rid of slows, bottlenecks, and fragmentation-induced crashes. Visit www.diskeeper.com/w9

When systems are thoroughly defragmented, they run faster and more reliably—period.

[1] Available on Pro Premier, Server and EnterpriseServer editions.
[2] See white paper at www.diskeeper.com/wpaper

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EDITOR'S NOTE

Windows IT Pro welcomes feedback about the magazine. Send comments to letters@windowsitpro.com, and include your full name, email address, and daytime phone number. We edit all letters and replies for style, length, and clarity.

More Vista Annoyances

I read Michael Otey's Top 10 column, "Windows Vista Annoyances" (January 2008, InstantDoc ID 97490), and I agree with most of his annoyances. I thought I'd offer my own list of the top 10 reasons I'm not running Vista as my primary OS.

1. Windows Mail doesn't let me resize all columns.

2. Vista won't let me drag a new toolbar off the taskbar to the desktop. (I like to set up My Computer and My Network Places as an autohide toolbar on the right edge of the screen, like a sidebar.)

3. Disk Defragmenter forces me to defragment all drives, unless I use the command line; there's no GUI option for selecting individual drives.

4. When I choose to autohide the taskbar, Vista won't let me drag a shortcut to the taskbar without dragging it over the Start button area.

5. Vista requires more clicks for changing the time and for updating the time with a time server.

6. On the Vista taskbar and desktop, I can't right-click the network icon to access Properties, Repair, or Status options.

7. The functionality for watching newsgroup messages through Windows Mail doesn't work correctly. (Microsoft knows about the problem and won't fix it.)

8. When I view files in Windows Explorer's details view, an entire line has focus. Setting focus in the folder is difficult, especially using the *Single-click to open an item* option. I end up opening a file when all I want to do is set focus.

9. In Windows Explorer, I see no folder-size status information in the status line—only the number of files.

10. The sidebar has no autohide option.

—Gary Keramidas

Command-Prompt Castaway

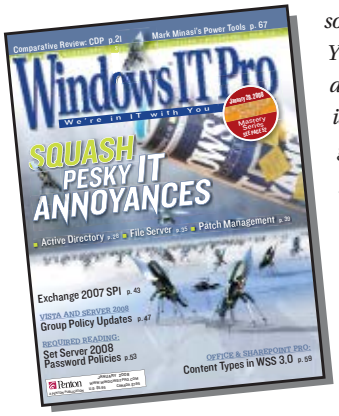
Lazy administrators have overlooked command-line tools for ages. Curt Spanburgh's article, "Castaway on Command-Prompt Island" (January 2008, InstantDoc ID 97507), shows how the command line can save you a lot of work and time if you have a basic understanding of the tools—and an open mind to look further than the GUI.

—Rob Sanders

Who Are You?

I'm just now getting around to reading Karen Forster's IT Pro Perspective piece, "Microsoft Asks: Who Are You?" (December 2007, InstantDoc ID 97478).

Microsoft abandoned a lot of people with Exchange Server 2007. PowerShell is great if you're managing dozens of like servers, but I don't have many Exchange servers, and I don't want to be a UNIX administrator. I'm a child of Windows. I love the GUI. I hate that I'll have to perform certain command-line tasks because they aren't exposed in the Exchange Management Console (EMC). When Microsoft did its Exchange 2007 Technology Adoption Program (TAP), the company seemingly forgot to involve small to mid-sized business (SMB) Exchange administrators, because people like me don't want to deal with the command line.



I know SP1 exposes more in the GUI, but until it's all exposed (or at least 98 percent of it), I won't be satisfied. Is my visual nature part of my personal life? Maybe not in the true spirit of your article, but I would have been happy to give feedback about these changes to the Exchange 2007 team, had I been given the opportunity.

Your article gives me hope that Microsoft has recognized the error of its ways. In my case, the situation has caused me to pause an Exchange 2003–to–Exchange 2007 transition until I can get a better grasp of what isn't exposed in the GUI and what we're going to have to do from the command line.

—Trey Cook

Many readers have responded to this column, and all of them think Microsoft's Who Are You? efforts are a bad idea. So, it's good to get your hopeful perspective. By the way, you certainly aren't alone in your concern about Exchange and PowerShell. Check out the blog entry I wrote on exactly that topic: www.windowsitpro.com/Article/ArticleID/95646/An_Exchange_Users_Lament.html. You'll find that a lot of people responded with similar concerns. Thank you for taking time to write.

—Karen Forster

InstantDoc ID 98077

Oops

In the product review "HP Compaq dx2250 Microtower Business PC" (December 2007, InstantDoc ID 97321), we incorrectly defined the acronym TPM. The correct definition is Trusted Platform Module. We apologize for the error.

The Perfect Fit... for your growing storage needs

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Fighting Spam and Phishing with SPF

Everybody knows that unsolicited email advertising, commonly referred to as spam, and its even more evil descendant, phishing, can be both an annoyance and a security risk to an organization. Everyday phishers send emails purporting to be from organizations you do business with, attempting to convince the recipient to provide sensitive information, typically of a financial nature.

Sender Policy Framework (SPF) records are designed to protect against forged emails and reduce the number of incoming spam messages a mail system (and sometimes users) have to process. Many times spammers or phishers send email with a forged From address, hoping that the domain name they forge will catch a victim's attention or at least be allowed through spam filters. An SPF record is a DNS TXT record that a mail server or spam filter will access to verify the source of email messages as they arrive. Many email services began checking SPF records as early as 2004.

Enabling SPF record checking in your mail server software or spam filtering software varies by vendor. Many Open Source email platforms support SPF record checking natively, and plugins (both free and commercial) are available for Microsoft Exchange platforms. You should, however, do more than just implement SPF record checking—you should place an SPF record in your own DNS entries to help fight spam and reduce the chance that a phishing attack utilizing your domain name is successful. Larger organizations might host their own external DNS servers, while others rely on their Web-hosting or domain-registration company's DNS servers.

To add a TXT record in Windows DNS, select Administrative Tools under the Start menu, then choose DNS. From there, navigate to Forward Lookup Zones, then to the domain to which you want to add a TXT record. Right-click an empty space and select Other New Records. From there, choose *Text (TXT)*. You can name the TXT record anything you want. Strings of code need to be entered into the Text field. For most organizations, the following TXT record value is acceptable to implement SPF:

```
"v=spf1 a mx -all"
```

This string essentially states that if the mail is received from an IP address that's listed in the sending domain's A or mail exchanger (MX) records, the mail is legitimate and should be processed. If specific IPs send email that isn't part of the A or MX records, they can be included using the ip4: mechanism, as the following shows:

```
"v=spf1 a mx ip4:1.1.1.1 -all"
```

In this example, the IP address of the additional mail server is 1.1.1.1.

Prior to implementing SPF, you must make sure that you've identified each IP that mail originates from and each domain name used by your organization. For domains that mail should never be sent from, the following SPF record can be used:

```
"v=spf1 -all"
```

This SPF record states that the domain has no IPs that send mail, and the mail system receiving mail from this domain should automatically reject the message.

As with all things technical, you need to test your implementation to ensure it functions as you expect. The Sender Policy Framework Web site (www.openspf.org) has some excellent tools to help you implement and test your SPF records.

If the vast majority of DNS records contained SPF values and if the vast majority of email servers used SPF to check for valid email server IP addresses, the volume of spam and phishing email would be significantly reduced. We could then all go about the business of doing business without the nuisance and security risks associated with spam and phishing.

—Nolan Garrett, Co-Founder and Chief IT Consultant, Intrinium, and Jeff Jones, Co-Founder and Chief Security Consultant, Intrinium

InstantDoc ID 98034

EDITOR'S NOTE

Share your Windows discoveries, comments, solutions to problems, and experiences with products and reach out to other *Windows IT Pro* readers (including Microsoft). Email your contributions to r2r@windowsitpro.com. Please include your phone number. We edit submissions for style, grammar, and length. If we print your submission, you'll get $100. Submissions and listings are available online at www.windowsitpro.com. Enter the InstantDoc ID number in the InstantDoc ID text box.

Use ADSI Edit to Associate File Extensions

Applications that you deploy with Group Policy Software Installation sometimes don't register their file extensions. Consequently, when someone double-clicks a file that has an extension of one of those published applications, the auto-install feature doesn't work. This situation most often occurs in applications that weren't designed for deployment through Group Policy Software Installation but were deployed anyway through some minor tweaks. (If you're unfamiliar with Group Policy Software Installation, see technet2.microsoft.com/windowsserver/en/library/4bdaf0f7-b7ac-41a6-9d25-9eab6aa1965c1033.mspx.)

One way to solve the file extension problem is to use ADSI Edit to manually add the file extensions to the Group Policy Object (GPO) that publishes the applications. To show you how this solution works, let's walk through the steps you'd use to add the file extension for Microsoft Visio 2007 Viewer, which unfortunately wasn't designed for deployment through Group Policy Software Installation. Here are the steps you need to follow:

1. Download Visio 2007 Viewer (visioviewer.exe) from the Microsoft Download Center (www.microsoft.com/downloads/details.aspx?FamilyId=D88E4542-B174-4198-AE31-6884E9EDD524&displaylang=en). You'll need WinZip to unzip this file. If you don't have WinZip, you can use 7-Zip, which is freeware that you can download from www.7-zip.org.

2. Double-click visioviewer .exe. In the window that appears, right-click visioviewer.exe and select the option to extract the files to a new folder. After the extraction operation completes, the folder should contain five files, including vviewer.msi. Copy that folder to the share you use for GPO-installed packages.

3. Create a new GPO, go to the User Configuration\Software Installation folder in the Microsoft Management Console (MMC) Group Policy snap-in, and use the vviewer.msi file to publish the application. Because Microsoft didn't create Visio 2007 Viewer with GPO installation in mind, the file extension .vsd doesn't get registered.

Apostolos Fotakelis

4. Obtain the globally unique identifier (GUID) of the GPO you used to publish Visio 2007 Viewer. To get it, open the GPO and move to the root level, which is the level above Computer Configuration. Right-click and select Properties. The GUID appears in the *Unique name* field.

5. Use ADSI Edit to edit the GPO. (If you don't have this tool installed already, you can find it in the Windows Server 2003 Support Tools.) Under the Start menu, select Run. In the Run dialog box, type *adsiedit.msc* and click OK. After ADSI Edit opens, go to the Action menu and select the *Connect to* option to open the Connection Settings dialog box. In the dialog box's Connection Point section, click *Select a well known Naming Context* and select Domain from the list. In the Computer section, enter the name of your nearest domain controller (DC). Click OK.

6. Navigate to Domain, DC=*<your AD domain's LDAP name>*,CN=System, CN=Policies,CN=*<your GPO's GUID>*,CN=User,CN=Class Store,CN=Packages. Here you'll find representations for all your GPOs. If you have more than one GPO, you'll have to manually find the correct one by double-clicking each GPO and checking the value of the displayName attribute, which needs to be Visio Viewer in this case.

7. After you find the correct GPO, look for its fileExtPriority attribute and open it. (If you don't see this attribute, clear the *Show only attributes that have values* check box.) In the dialog box that appears, enter the extensions you want to associate with this package. Visio 2007 Viewer's extension is .vsd, so you'd enter

```
.vsd: 0
```

Note that you must include the space between the colon (:) and the value of 0. Click Add. You can enter multiple extensions, following the procedure I just described.

That's it! Now, whenever users double-click .vsd files, Visio 2007 Viewer will automatically get installed. Interestingly, if you add more extensions after the initial deployment of the package, you don't have to wait for Group Policy to be refreshed for the change to take effect. It works instantly!

—Apostolos Fotakelis, Systems Administrator, Aristotle University of Thessaloniki, and freelance IT consultant

InstantDoc ID 97782

Tools for Troubleshooting Locked-Out Accounts

Troubleshooting locked-out accounts can be difficult and time-consuming. Cached credentials on drive mappings, Microsoft IIS application pools, COM+ objects, scheduled tasks, services, and interactive logons are all common causes of account lockouts. Fortunately, Microsoft provides tools and techniques to help you narrow the search for the root cause, including the Account Lockout and Management Tools. You can download these tools from the Microsoft Download Center at www.microsoft.com/downloads/details.aspx?FamilyId=7AF2E69C-91F3-4E63-8629-999ADDE0B9E&displaylang=en.

At my organization, we recently used the following tools to locate the root cause of a locked-out account that was discovered during one of our regularly scheduled password changes:

EventCombMT.exe. EventCombMT.exe collects and filters events from the event logs of domain controllers (DCs) within a specified domain. This tool features a built-in search for account lockouts, which defaults the search to the security log. It populates the Event ID field with relevant event IDs (i.e., IDs of events that pertain to locked-out accounts). Consolidating the lockout events into text files in a common folder provides a quick way to search for the locked-out account and the name of the server or workstation from which the lockout originated.

LockoutStatus.exe. LockoutStatus.exe examines all DCs in a domain, letting you know when the target account last locked out and from which DC. In addition, it provides the locked-out account's current status and the number of bad password attempts that have been made. Depending on the topology of the Windows domain, this information can help you determine whether the server or workstation locking out the account is located at a particular site.

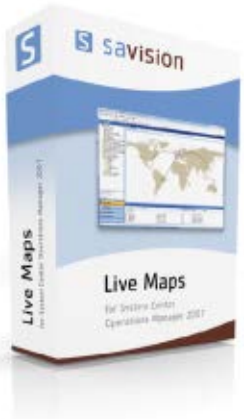
Netlogon logging used for tracking Netlogon and NT LAN Manager (NTLM) events. Enabling Netlogon logging on all DCs is an effective way to isolate a locked-out account and see where the account is being locked out. The Microsoft article "Enabling debug logging for the Net Logon service" (support.microsoft.com/kb/109626) contains information about how to enable Netlogon logging on the various versions of Windows. Although Netlogon logging isn't part of the Account Lockout and Management Tools, NLParse.exe is used to parse the Netlogon logs—and NLParse.exe is one of the account lockout tools. Enabling Netlogon logging can create large files quickly, so using NLParse.exe to locate relevant events in the Netlogon log can save time when troubleshooting lockouts. The output from NLParse.exe is extracted to comma-separated value (CSV) file, where it can be easily searched or sorted.

The Account Lockout and Management Tools helped us reduce the amount of effort it took to locate the root cause of our locked-out account. They helped us target our energy at specific servers or workstations in our organization.

—Brent McCraney, Senior Technical Analyst, Ontario Teachers' Pension Plan

InstantDoc ID 98031

EDITOR'S NOTE: Send new product announcements to products@windowsitpro.com.



Microsoft Systems Center Operation Manager

Create and Display Operations Manager Information Visually

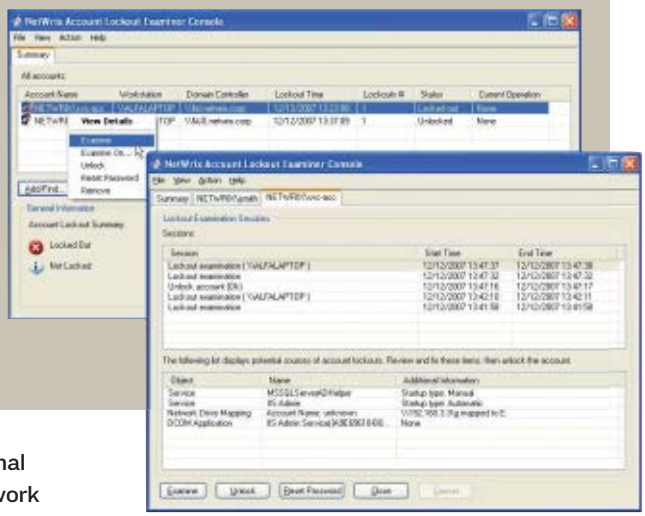
Bringing visual mapping features to Microsoft System Center Operations Manager 2007 is the focus of Savision's new mapping product: **Live Maps for Operations Manager 2007**. According to Savision, this product is the first mapping product to integrate with Operation Manager. Using Live Maps, admins can create visual, map-based views of their IT infrastructures. Each user of the system can have a unique view into the data that Live Maps generates, from a strategic, top-level view for the CIO to a functional, operational perspective for a network administrator. For more information, contact Savision at 905-812-0638 or visit www.savision.com.

Product Spotlight

Storage/Backup and Recovery

Optimize Key DPM 2007 Tape Archive Functions

FalconStor Software announced that it has successfully tested all its **virtual tape library (VTL) storage solutions** with Microsoft System Center Data Protection Manager (DPM) 2007. IT storage planners and architects can now combine DPM 2007 with new and existing heterogeneous environments by integrating FalconStor VTL features with multiple backup applications that share tape library resources. FalconStor presented its VTL solutions at Microsoft TechEd last year in Barcelona, Spain. For more information, contact FalconStor at 866-669-3252 or visit www.falconstor.com.



Security

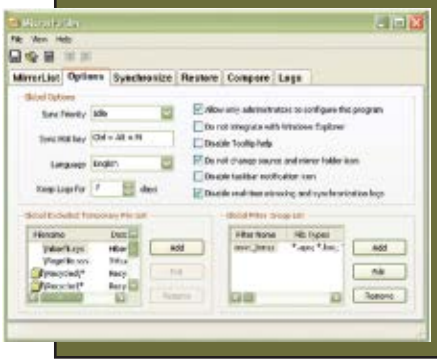
Manage User Account Lockouts

Account Lockout Examiner from NetWrix is designed to help IT pros manage and troubleshoot account lockout policy. NetWrix tracks account lockouts in real-time, and can be configured to automate work related to detecting and responding to account lockout situations. A Web-based portal allows help desk personnel to manage account lockout issues, and many program functions are accessible remotely from handheld devices. A version of Account Lockout Examiner for PowerShell is also available. For more information, contact NetWrix at 888-638-9749 or visit www.netwrix.com.

Backup and Recovery

Real-time Mirroring, Synchronization, and Backups on Windows

RAID-1 capabilities are typically available only in software, which is expensive. Techsoft offers a less expensive alternative with **MirrorFolder 4.1**, a real-time mirroring and synchronization application that backs up files from a local Windows drive to any local, removable, or network drive. In RAID-1 mode, MirrorFolder creates a real-time, bootable backup of your hard drive on another local drive. MirrorFolder works on Windows Vista, Windows Server 2003, Windows XP, and Windows 2000 Server servers. For more information, contact Techsoft at info@techsoftpl.com or visit www.techsoftpl.com.



InstantDoc ID 98001

Insights from the industry

Manage Your Mobile and Distributed Systems As If They're Local

Remote workers disconnected from the corporate LAN can pose a big threat to your network. Traditional systems management software can only actively manage assets that are inside your corporate firewall. You're probably looking for a product that extends management beyond the corporate LAN and actively manages remote devices through the Internet—without the need for costly VPN connections. LANDesk has a product you need to look at.

"Our customers are really interested in doing more with less," said Nathan McLain, LANDesk's product manager for the LANDesk Management Gateway Appliance. "People are worried about management functions, security, policy enforcement and so on. The challenge that has brought the Management Gateway solution is a growing, geographically distributed workforce. Mobile users are proliferating, and as one of our beta testers said, 'I'm not only responsible for my local division; I'm now responsible for another 25 divisions, along with all those servers, desktops, and mobile devices, distributed throughout different geographies!'"

The LANDesk Management Gateway Appliance solves the problem of remotely managing geographically distributed sites any time, anywhere. "In the traditional sense of remote, secure connections," McLain said, "you typically think of a VPN, which punches a hole in the firewall and lets anybody with a username and password access the corporate network. That might be OK for salespeople who will get to a VPN to be managed, but in the real world, mobile and distributed systems aren't that connected to the network. Most users don't use the VPN regularly and thus aren't manageable that way."

With the LANDesk Management Gateway Appliance, a laptop with the LANDesk Management agent can call home and obtain a brokered, secure communication over SSL. Through that gateway, the remote system can download software distributions, pull down policies, and even allow the administrator to remotely control the device. In other words, the appliance permits the kind of functionality that you have on the local network from anywhere in the world. "The IT administrator uses LANDesk software for inventory, software distribution (updates, application), remote control (very important for support), and security (policy enforcement)," said McLain. "The LANDesk Management Gateway Appliance lets you do that anywhere."

The solution's plug-and-play (PnP) capability lets you instantly deploy, set up, and manage desktops and laptops outside the firewall in order to immediately inventory and bring corporate assets into compliance.

—Jason Bovberg

InstantDoc ID 97516

Odyssey Software Tackles Mobile Device Management with Athena

Managing the proliferation of mobile devices is the focus of a new product from Odyssey Software: the Athena Add-In wireless device manager for Microsoft System Center Configuration Manager (SCCM) 2007. According to Odyssey, the extended mobile device management provided by Athena is now integrated with the SCCM console to increase administrative control over enterprise mobile devices without the need to launch a separate proprietary console.

Odyssey Software President and CEO Mark Gentile announced the release of Athena at the 2007 Microsoft TechEd IT Forum in Barcelona, Spain. According to Gentile, Athena integrates with SCCM to provide extended device management and support for any mobile device running Microsoft Windows Mobile and Windows Embedded CE, including consumer mobile devices, ruggedized portables, and smart phones.

Gentile explained that Athena allows admins more control of mobile devices over any public or private IP-based network, including live remote-control functionality for troubleshooting, the ability to distribute software and control settings-management and policy enforcement from a central location, and the ability to see what applications the device is running.

Athena does not use a dedicated server, process, or even a console. "The heart of the product is really an agent that resides on the device," says Gentile. "SCCM can deploy that agent out of the box."

Gentile says Odyssey is developing a similar add-in for Microsoft System Center Mobile Device Manager 2008 and a management pack for System Center Operations Manager.

Tony Rizzo, director of mobile technology research for industry analyst The 451 Group, says "more and more Microsoft shops will adopt the Odyssey platform," as a result of Odyssey's deepening affiliation with Microsoft.

But, Microsoft's history of partnering up with companies and their innovative technologies—at least until it can produce the technology itself—should worry Odyssey. Rizzo says things are going well for Odyssey now, but the company needs to watch out if Microsoft decides to veer away from its affiliation with Odyssey once they can duplicate the functionality of tools like Athena.

Rizzo believes the enterprise mobility market will grow substantially in 2009, with the number of active mobile device users expected to be near 80 percent. "This market is still in its infancy," Rizzo says. He believes next year will be the "on-ramp" year for enterprise mobile technology market players to establish themselves.

—Todd Erickson

InstantDoc ID 97657

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Top 10 Reasons to MIGRATE to WINDOWS SERVER 2008

by Michael Otey

Driven by customer feedback, Windows Server 2008 provides a host of important new features that make it Microsoft's best server operating system to date. Here are the top 10 reasons to make the move to Windows Server 2008.

1 Hyper-V Virtualization – Virtualization is one of the hottest IT technologies and three editions of Windows Server 2008 include Microsoft's new Hyper-V virtualization support. Hyper-V uses an all new lightweight hypervisor that's able to take full advantage of the new hardware assisted virtualization support built-in to the latest AMD-V and Intel V-T enabled CPUs. The net result is vastly improved host scalability and improved VM guest performance with no need for additional virtualization software.

2 Server Core – Another huge reason to migrate to Windows Server 2008 is a new type of server installation known as the Server Core. Server Core is Microsoft's answer to headless Linux implementations. Server Core is a lean and mean version of the Windows Server 2008 OS that's primarily designed for ultra reliable infrastructure support. Server Core systems can act as a domain controller, a DNS server, a DHCP server, a file and print server and a virtualization host. All unnecessary components like the graphical shell, IE, the .NET Framework, and Outlook have all been stripped out. The net result is improved performance and security with less need for patching.

3 Server Manager – The new Windows Server 2008 Server Manager makes administration of Windows Server 2008 easier and more effective than ever before. The new Server Manager provides a role-based central management dashboard for your server. The new Server Manager combines the functionality of the older Windows Server 2003 Manage Your Server window and the Security Configuration Wizard. Using the new Server Manager you can add and change server roles and features installed on the server as well as drill into any related event log messages. Server Manager is completely integrated with Windows Server 2008 security and as you add and remove roles and features it also automatically performs security related tasks like opening and closing firewall ports.

4 Network Access Protection (NAP) – The inclusion of NAP is another great reason to migrate to Window Server 2008. Using NAP, an administrator can create customized system health and security levels that a networked client must comply with before being granted network access. For example, a networked client might be required to have a certain software updated level, antivirus software installed, or a firewall enabled before they are granted network access. Networked clients that don't meet the organization's standards will have restricted network access until they come into compliance.

continued on back

5 Read Only Domain Controller (RODC) – For organizations that support distributed branch office deployments Windows Server 2008's new RODC capability is another great reason to move to Windows Server 2008. The new RODC enables you to deploy a domain controller that hosts a read-only copy of the domain database to a remote or insecure location. The RDOCs can't make any changes to the AD database and therefore don't replicate AD changes to the master domain controllers. RODCs can provide improved security and faster logon times for the network users in remote or branch office locations.

6 Internet Information Service 7.0 – For Web servers, the new enhancements to IIS7 make a compelling case to adopt Windows Server 2008. IIS7 has a new modular architecture that gives an administrator a more finely grained ability to control exactly which features are installed on the Web server. IIS7 provides an entirely new management UI that lets an administrator manage both Web server and ASP.NET properties. In addition, IIS7 dispenses with the old metabase and it now stores its configuration settings in an XML file.

7 Terminal Services – Terminal Services in Windows Server 2008 have also been significantly enhanced. Using the new Remote Desktop Protocol (RDP) 6.0, the new Terminal Services support in Windows Server 2008 now offers the ability to share a single remote application rather than the entire desktop. From the remote user's perspective, running the remote terminal services application looks just like executing a local application. There is also a new Terminal Services Web Access feature that enables browser-based web access to Terminal Services.

8 Failover Clustering – For improved availability Windows Server 2008 also provides a number of enhancements to Failover Clustering. Architecturally, Windows Server 2008 Failover Clustering features a new quorum model that removes the quorum as a single point of failure. A new setup wizard and management console simplifies cluster administration. In addition, there's also no longer a need to buy systems off the Hardware Compatibility List (HCL). A new hardware configuration validation reports on a system's suitability for clustering.

9 New Backup and Recovery Tools – All new backup and restore tools are another great reason to consider migrating to Windows Server 2008. The old hard-to-use NTBackup application found in Windows 2000 Server and Windows Server 2003 has been replaced. The new backup is easier to use and is able to perform system image backups. It uses Volume Shadow Copy Service (VSS) to perform block-level backups and can now backup to DVD.

10 Hardened System Security – Improved security may be the best reason to migrate to Windows Server 2008. Built on top of the hardened Windows Vista core, Windows Server 2008 is the most secure operating system that Microsoft has produced. Windows Server 2008 takes a shields-up approach to security where everything is locked down from the time the system is installed until you begin to open it up by installing roles using Server Manager. Windows Server 2008 also has an updated version of the Windows Firewall. The new Windows Firewall supports filtering both incoming and outgoing traffic and can be configured using group policies or the new Microsoft Management Console.

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O&O Defrag 10 Professional Edition

Editor's Note: Following is a summarized version of Jeff James' review of O&O Defrag 10 Professional Edition. To read a full-length version of the article, go to www.windowsitpro.com and enter InstantDoc ID 97966.

Keeping your hard disks organized and optimized is one of the regular maintenance tasks that most IT pros don't like to do but that must be done on a regular basis. Defragmenting your hard disks not only improves system performance and reliability, but also keeps small hard disk problems from becoming large hard disk problems. Enter O&O Software's **O&O Defrag 10 Professional Edition**, a robust, standalone disk-defragmentation tool.

O&O Defrag 10 supports the 32-bit and 64-bit versions of Windows Vista and Windows XP, as well as Windows 2000 Professional. Installing the product is quick and painless, and it even provides several options to help you configure the software correctly for a given piece of hardware.

The product offers five defragmentation methods, which are shown in Web Figure 1 (www.windowsitpro.com, InstantDoc ID 97966). The O&O Defrag 10 interface is clean, attractive, and strongly resembles Microsoft Office 2007's ribbon-based UI. The default view provides detailed information about the disks currently being defragmented. You can schedule defragmentation tasks in advance by using O&O Defrag 10's defragmentation scheduling tool. Also, you can create multiple defragmentation jobs at once to save time and streamline your defragmentation tasks.

I installed and ran O&O Defrag 10 on a network running Vista and XP machines, and tested the software by using each of the defragmentation methods. All the defragmented machines showed a range of speed improvements related to disk access, with a system running XP (and booting from a heavily fragmented local disk) showing nearly a 10-second improvement in boot times. Speed improvements varied, but were most noticeable on older machines running XP. If you're trying to squeeze as much life as possible out of an existing IT infrastructure still running XP, upgrading to XP SP3 and investing in a disk-defragmentation tool, such as O&O Defrag 10, might help you maximize your existing IT investment.

The version of O&O Defrag 10 that I tested was primarily aimed at small-to-midsized businesses (SMBs). However, large enterprises that are looking for better network support and a central control console might want to take a look at O&O Defrag 10 Server Edition.

I do have some gripes about O&O Defrag 10, but they're minor. One thing I don't like is that O&O Software doesn't have an office in the United States, which could be a problem for businesses that prefer a stateside sales and support office. However, that shouldn't discourage you from trying what is arguably one of the best disk-defragmentation tools available today.

InstantDoc ID 97966

—Jeff James

SUMMARY

O&O Defrag 10 Professional Edition

PROS: Robust feature set; attractive interface; multiple defragmentation options

CONS: O&O Software lacks a US office; doesn't offer multiple licenses for SMBs

RATING: ◆◆◆◆◆

PRICE: $44.95/computer for Professional Edition; $249/computer for Server Edition; volume discounts available

RECOMMENDATION: O&O Defrag 10 is one of the best disk-defragmentation tools on the market today—I highly recommend you try it.

CONTACT: O&O Software • www.oo-software.com • +49-30-4303-4303

Paul's Picks

Summaries of in-depth product reviews on Paul Thurrott's SuperSite for Windows
www.winsupersite.com

Apple Mac OS X Leopard 10.5

PROS: A continuation of the solid Mac OS X; better network browsing

CONS: Buggy initial release; no clear value proposition when compared to Windows Vista

RATING: ◆◆◆◆◇

RECOMMENDATION: Leopard disappoints only in that it's not the major upgrade that Apple touts. A continuation of the mature and capable Tiger, **Leopard**'s new features are hard to spot: a backup application, Time Machine, that's laughably childish; a multiple-desktop utility called Spaces; and that's about it. Leopard has been given a spit-shine, though some features aren't as successful as others. Particularly bad are the Stacks pop-up windows and the bland folder icons. Apple continually updates its products, though, so these nitpicks might be fixed by the time you read this. Overall, Leopard is a solid update but offers no reason to switch from Windows.

CONTACT: Apple • 800-275-2273 • apple.com

DISCUSSION: www.winsupersite.com/reviews/macosx_leopard.asp

Apple iPhone 1.1.3

PROS: Dramatic new functionality; IMAP support for Gmail

CONS: No Microsoft Exchange support; Microsoft Outlook calendar sync is broken

RATING: ◆◆◆◆◇

RECOMMENDATION: As flawed as it is technically exciting, Apple's recent major **iPhone** update adds a slew of functionality and plugs holes from previous releases. Now, the iPhone Home screen lets you push superfluous icons to a secondary page and add Web application shortcuts called Web Clips. Google Maps has been updated with a GPS-like location function, and the Mail application fully supports IMAP-based Gmail. Lack of Exchange support limits iPhone's appeal for corporations. And Outlook calendar sync doesn't work right on many Windows-based PCs.

CONTACT: Apple • 800-275-2273 • apple.com

DISCUSSION: www.winsupersite.com/reviews/iphone_08.asp#113

InstantDoc ID 98059

Specops Password Policy

Editor's Note: To read the full-length version of this review, go to www.windowsitpro.com and enter InstantDoc ID 98074.

Special Operations Software's **Specops Password Policy** (SPP) is a password policy enforcer that lets you create multiple password policies in the same domain. In my quest to keep my Active Directory (AD) forest as simple as possible, and yet be able to set multiple password policies, I recently tested SPP.

After I installed Microsoft .Net Framework 2.0 SPI and the Group Policy Management Console (GPMC) on the DC (both are prerequisites for installing the Specops application), I was ready to install the Specops Password Policy Domain Administration tool by clicking Setup.exe. The software installation requires a reboot, so be sure to add this to your deployment plan.

After the installation was finished, I registered a special Specops extension to the Active Directory Users and Computers extension by running SpecopsAducMenuExtensionInstaller.exe with the parameter /add. This let me see the new Specops features in Active Directory Users and Computers, which Figure I shows. What's nice about this added functionality is that it's not a Schema update but simply updates the Active Directory Users and Computers tool.

I decided to create a separate password policy for each of my organizational units. I followed the Getting Started Wiki that I found online, and it stepped me through creating all of the policies. SPP is laid out extremely well and is very simple to navigate. You use this one tool to create password policy templates. You then use the standard Microsoft Group Policy Management Console (GPMC) to deploy the templates via Group Policy. It couldn't be simpler.

When I was done, each of my three OUs had a different password policy. With SPP, an endless set of password policy configurations is available. Some configurations will be familiar as they mimic the standard settings in the default domain GPO. Other settings will be a new and welcomed sight. For example, not only can you require the setting "three of the four" character types as the standard Microsoft "complex password setting" requires, you can specify *how many* of each character is required.

If you're contemplating adding a second domain because you have to have another password policy, I recommend that you make your life easier and instead check out Specops Password Policy.

InstantDoc ID 98074

—Eric B. Rux

Not only can you require the setting "three of the four" character types as the standard Microsoft "complex password setting" requires, you can specify *how many* of each character is required.

SUMMARY

Specops Password Policy

PROS: Easy creation of multiple password policies in the same Active Directory (AD) domain; extremely simple interface; tight integration into Active Directory Users and Computers and Group Policy Management Console; no AD Schema updates necessary

CONS: Not able to copy existing Specops password template to use as a baseline when creating a new template, making creating new templates based on existing templates difficult; firewall must be disabled to install the Sentinel service remotely

RATING: ◆◆◆◆◆

PRICE: $1,200 per domain plus $4 per user; volume discounts for domains above 500 users

RECOMMENDATION: If you need multiple password policies and are considering adding multiple domains to accomplish this, check out Specops Password Policy.

CONTACT: Special Operations Software • www.specopssoft.com • 866-857-5325

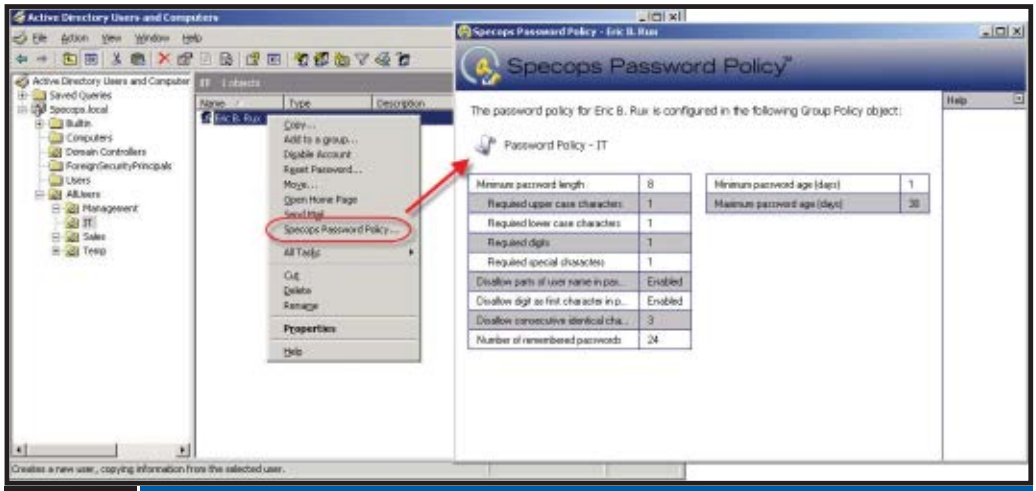

Figure 1: SPP integration with ADUC

Online Office Suites

Can a low- or no-cost online office suite replace Microsoft Office?

by Jeff James

When it comes to the workhorses of business software—word processors, spreadsheets, and presentation software—the Microsoft Office suite has ruled the corporate roost for more than a decade. Anyone remember **WordPerfect**, **Lotus 1-2-3**, or Harvard Graphics? Like Pete Best—the onetime member of the Beatles who was dismissed before the band hit the big time—those once-famous applications were relegated to bystander status as Office became the preeminent office application suite. Corel, IBM, and Harvard Graphics were slow to port their wares to Windows, and history has proven the folly of being slow to adapt to changes in the market. Some might argue that Microsoft's overly aggressive pricing and ability to bundle Office with new PCs had more of an impact on the fate of those applications, but the outcome isn't in dispute: Microsoft became the dominant provider of business application software with Office and hasn't looked back.

Fast forward to 2008: Today, Microsoft Office is fending off challenges from new competitors. Thanks in part to the remarkable growth of the Internet and the explosion of high-speed Internet access, a new generation of Web applications is beginning to compete with traditional office-productivity products such as Microsoft Word, Excel, and PowerPoint. Unlike traditional applications that are installed and maintained on a local client, these online apps live entirely on the Web, and their files reside on the application provider's file servers. For example, **Google Docs** lets you create, edit, print, and save spreadsheet, word processor, and presentation documents without needing to install an application on your PC. These products also leverage the strengths of the Internet by allowing for the easy sharing of documents among office workers who are separated geographically from one another. And here's the kicker: Most of these online apps are free (or very low cost), which has captured the interest of many cash-strapped IT managers.

The sheer number and diversity of online apps has mushroomed over the past few years: Online word processors such as **Adobe Buzzword** and **Coventi Pages** allow documents to be created, edited, and shared online, and online spreadsheets such as Team and Concept's **EditGrid** and TrimPath's **Num Sum** do the same for workbooks. Even Dan Bricklin—the co-creator of VisiCalc, the world's first spreadsheet—has entered the online app arena with Software Garden's **wikiCalc**. All of this development is good news, but do any of these online applications really have a chance of unseating Office as the premier business application suite? To find out, I've compared five of the most popular online office products that offer word processing, spreadsheet, and presentation capability: **Ajax13**, **Silveroffice gOFFICE**, Google Docs, **ThinkFree Online**, and the **Zoho office suite**. Instacoll's **Live Documents** office suite was announced at press time, but Instacoll didn't respond to our invitation to participate in this review. Transmedia's **Glide Business** offers online applications but also includes extensive OS replacement features that are beyond the scope of this review.

Although Microsoft has been slow to respond to the challenge these newcomers present, it has begun to articulate a new "Software plus Services" strategy that attempts to combine the strengths of the traditional Office applications with the improved flexibility and collaborative nature of Web applications. The beta of Microsoft Live Office Workspace, which was announced just before press time, is a product of that strategy. (For more information, see the sidebar "Microsoft Office Live Workspace: A Winning Strategy?" on page 22.)

To test how well these online office suites compete with (and work together with) Microsoft Office, I created sample Excel, PowerPoint, and Word documents, then used each of the online suites to load, edit, save, and print each document. If any application couldn't import the documents, I created an approximation of each document manually by using the relevant application's editing tools. Table 1, page 23, provides a price- and feature-comparison summary of all five products.

Finally, in the interest of fairness, all of these products are classified as betas in development by their vendors. Nearly all exhibited minor glitches or bugs, so you'll want to consider criticisms of the behavior of certain program functions in that context.

Google Docs

Although Google Docs is the most well-known online product that replicates some of the functionality of Microsoft Office, it isn't—as of this writing—the best Web-based alternative to Office. Google Docs is available in a free edition for home and small-business use, and Google also offers a Premier Edition that includes extra features—mainly security and support features—for business use. For example, the Premier Edition includes APIs that let Google Docs integrate easily with an existing IT infrastructure, offers 25GB of storage space per account (the free version offers 2.75GB), and provides access to Postini spam control and other

business-oriented features.

Google Docs did an admirable job preserving the appearance of my sample Word document and left most of the formatting intact. The test PowerPoint document was imported without too many glitches, although some text overflowed existing text boxes, and font sizes varied from the original Word document. The Excel document was larger than the 1MB size limit Google Docs imposes for Excel documents, but smaller worksheets loaded without problems.

The ability to share documents with others and easily track shared document revisions is a slick feature, and the recent release of Google Gears—an API that enables online applications that use it to be run offline—promises to make Google Docs even more useful. You can save documents that you create with Google Docs locally for editing with other applications, but the current version of Google Docs can't edit documents offline. (Ironically, Zoho Writer uses Google Gears to provide offline document-editing features.)

Google Docs can be a good choice for home and small-office work, but the limited feature set means it isn't ready to replace Office for the majority of users. That said, the document collaboration features are usable, Google Gears shows great promise for improving integration between online and offline files, and Google will undoubtedly upgrade the functionality of Google Docs in the months and years to come.

SUMMARY

Google Docs

PROS: Tight integration with best of breed Web email; lots of storage space for documents; fast performance and good reliability; excellent document-sharing functionality

CONS: Not as feature-packed as ThinkFree and Zoho office suite; competitive solutions offer more applications, ability to edit documents offline

RATING: ◆◆◆◆◇

PRICE: Free for standard edition; $50 per user, per year for Premier Edition

RECOMMENDATION: A good Microsoft Office alternative for home users and small businesses that don't need complete Office compatibility but rather the ability to easily share and revise documents online.

CONTACT: Google • 800-225-5224 • www.google.com

Silveroffice gOFFICE

Silveroffice's gOFFICE combines an online word processor, spreadsheet, and desktop publishing program. The vendor claims that a graphical presentation application will be available soon, but it was unavailable for testing at press time.

gOFFICE is available in one edition for personal and business use priced at 99 cents per month. The spreadsheet module in gOFFICE offers the ability to import Excel documents, but the word processing application doesn't: You need to either create your documents from scratch online or cut and paste them into the document workspace from another word processing program. The word processing and spreadsheet modules have a very limited feature set, but both are easy to use—the lack of program features will turn off many business users, but getting up to speed with how to create, edit, save, and print documents is a straightforward process.

The gOFFICE applications include some nice features for personal use, including an assortment of free letterhead designs and sample text for a variety of common business uses, such as purchase orders, thank-you letters, and sales receipts. Silveroffice also provides a free document fax service to US phone numbers and free postal delivery of gOFFICE documents (limited to one mailing per week).

I encountered a number of glitches and head-scratching features when using gOFFICE, ranging from a tiny "gOFFICE.com" watermark included on all printed documents to module page headers that refer to gOFFICE as a "Free browser-based online office suite," despite the fact that users are charged to use the service. (The gOFFICE Web site's SSL certification expired in September 2007, which might make you think twice before entering your credit card number.) The online Help is anemic, and the current desktop publishing module lets you create only gift cards and business cards (although more templates are forthcoming).

Even at 99 cents a month, gOFFICE doesn't compare well to more full-featured offerings from Zoho, ThinkFree, and Google. Even home and small-business users will be better served by choosing another product.

SUMMARY

Silveroffice gOFFICE

PROS: Lots of free templates and sample text; US mail and fax services for printed documents

CONS: Limited feature set; inability to import Word documents; general program stability and performance problems

RATING: ◆◆◇◇◇

PRICE: $0.99 per month, per user

RECOMMENDATION: Free text templates and mail and fax services are unexpected (and welcome) features, but gOFFICE has little to offer beyond them. Because competitive products offer more features and stability for less cost, I don't recommend gOFFICE.

CONTACT: gOFFICE • www.goffice.com

ThinkFree Premium

Someone once said that imitation is the sincerest form of flattery. If that's the case, Microsoft should be blushing—ThinkFree is the closest thing yet to a literal translation of Office to an online environment. ThinkFree offers packages aimed at corporate and enterprise users, making it the best choice for business users looking for a light-duty

SUMMARY

ThinkFree Premium

PROS: Closely approximates Microsoft Office look and feel; excellent document sharing options; affords ability to work offline with some documents; good document import and export functionality

CONS: Slower performance with large documents than competitors; comparatively slow pace of updates and improvements to core applications

RATING: ◆◆◆◆◇

PRICE: Free for ThinkFree Premium; $30 per user per year for ThinkFree Server Edition

RECOMMENDATION: It still can't replace Microsoft Office in most office environments, but ThinkFree Premium comes closest to providing a Web-based, low-cost alternative to Office for home and small-business users than the competition.

CONTACT: ThinkFree • support@thinkfree.com • www.thinkfree.com

online alternative to Office.

ThinkFree is available in a number of variants that are available at low or no cost. A desktop version installs on a client machine and provides a subset of Office functionality. **ThinkFree Online** lets desktop users edit and create online documents that are hosted by ThinkFree. **ThinkFree Server** lets companies run the ThinkFree software on their own Web server. I chose to test **ThinkFree Premium**, which introduces the ability to work with (and sync) online and offline documents. It also provides 24-hour technical support and file synchronization options that make it the best choice for small businesses.

Whereas the other products in this comparison have developed their own interface design for each of their application modules, the ThinkFree UI strongly resembles Microsoft Office 2000 and 2003. Like Google Docs, ThinkFree features a common online workspace to which you can upload Word, Excel, and PowerPoint documents for editing. ThinkFree Premium also lets you access documents locally so you can edit them when you're not connected to the Internet. Two editing options are offered: A quick edit option is designed for creating simple online documents; a power edit option allows the creation and editing of more complex documents that are compatible with their Microsoft Office equivalents.

Other thoughtful touches abound: You can upload multiple files from a single screen, the online Help is verbose and actually helpful, and the file-sharing features are easy to find and use. On the downside, getting to my online files seemed to take longer than it did with some of the other products, and editing tasks periodically took a second or two longer than expected. ThinkFree lacks the vast quantity of applications (and frequency of updates) that Zoho offers, and it might trail Google when it comes to email and calendaring functionality. Office rules the roost when it comes to mid- to-heavy application use, but ThinkFree Premium is worth a look as the best of the current breed of online alternatives to Office for home and small-business users.

Zoho Office Suite

Like many of the other products in this comparison, Zoho has basic office-suite application tasks covered: **Zoho Writer**, **Zoho Sheet**, and **Zoho Show** provide basic word processing, spreadsheet, and presentation functions, respectively. (In this review, I refer to the Zoho office applications collectively as the Zoho office suite.) Where Zoho excels is in the depth and breadth of products it offers: Nearly a dozen online applications do everything from project management (**Zoho Projects**) to Web conferencing and database creation, in addition to customer relationship management (CRM—**Zoho CRM**) and wiki software (**Zoho Wiki**), and all are free.

In terms of document compatibility, Zoho Writer and Zoho Sheet loaded my sample Word and Excel documents without any formatting problems. Zoho Show loaded the sample PowerPoint document with a few visual glitches, mainly disappearing borders and some unusual font sizes. Conversely, most Zoho modules feature impressive export options once you've made changes to your online documents. For example, Zoho Sheet can export worksheets in XLS, Open Document spreadsheet (ODS), OpenOffice.org spreadsheet (SXC), Gnumeric, CSV, HTML, Extensible HyperText Markup Language (XHTML), and PDF formats. Zoho also offers a Zoho plug-in for Office that lets users edit and save documents directly into Zoho Writer and Zoho Sheet from Word and Excel, respectively. A free Zoho plug-in for Microsoft Office lets you save files locally.

Like Google Docs and ThinkFree Premium, Zoho provides robust support for sharing documents with other users online. During the course of my evaluation, Zoho released a slew of new updates and enhancements, and the frenetic pace of product updates is scheduled to continue.

Zoho may lack the professional appearance and Office-oriented feature set that ThinkFree Premium includes, but Zoho wins points for the breadth of the applications it offers, the rapid pace of its upgrades, and a very active online community that is frequented by many Zoho developers.

SUMMARY

Zoho Office Suite

PROS: Includes more than a dozen applications; lots of program features; robust import and export capability; affords the ability to work offline (via Google Gears) with Zoho Write documents; high-traffic (and helpful) user support forums; frequent and high-quality application updates

CONS: Bright, playful interface seems more focused on home users; some performance problems; Zoho Show import problems with some PowerPoint files

RATING: ◆◆◆◆◇

PRICE: Free

RECOMMENDATION: Only the narrowest of margins kept the Zoho family of applications from earning the top spot in this comparison. Zoho excels as a viable alternative to Microsoft Works (and similar application suites) for personal use—just a few more business-oriented features would see it emerge as the Microsoft Office alternative to beat.

CONTACT: Zoho • www.zoho.com

Ajax13

In addition to being the name of a powdery household cleanser my mother was fond of using, AJAX (the acronym stands for Asynchronous JavaScript and XML) describes a group of Web-focused programming techniques that allow rich, feature-packed Web applications to run with respectable performance in a Web browser. The AJAX programming methodology is an important part of most of the products featured in this comparison and lends its name to the last online office suite I examined: Ajax13.

Ajax13 is actually a compilation of five applications: ajaxWrite (word processing), ajaxSketch (drawing), ajaxXLS (spreadsheet), ajaxPresents (presentation) and ajaxTunes (a music player). Like most of the other products in this comparison, the product

SUMMARY

Ajax13

PROS: Clean module interface design; core applications load quickly

CONS: Lack of features; lots of import and export bugs and glitches; quirky, counterintuitive file-loading dialogs; requires Mozilla Firefox 1.5

RATING: ◆◇◇◇◇

PRICE: Free

RECOMMENDATION: Nearly all of the Ajax13 applications we tested had serious bugs, quirks, or simply didn't function at all. Granted, this software is in beta, but so are all the other products in this comparison. This one simply isn't worth the time or effort needed to make it work.

CONTACT: Ajax13 • www.ajax13.com

is free. Getting started with any of these applications can take some time because the Ajax13 suite requires the use of Mozilla Firefox 1.5 to function properly. Ajax13 doesn't work with Safari, Microsoft Internet Explorer, or Opera, although Ajax13 has stated that it's working on extended browser support. This requirement alone is a big negative, but weak browser support is the least of Ajax13's problems.

AjaxWrite—a simple word processor that sports a clean, minimalist interface—was the first module I tried. I attempted to load the test document, then waited. And waited. Then waited some more. After about 10 minutes of watching an animated loading screen that resembled a history of Google's stock price, I cancelled the import and moved to the ajaxPresents module. Not much luck here either: The program spit out an error message each time I tried to load the sample PowerPoint document. Hoping that the third time was the charm, I turned to the ajaXLS spreadsheet viewer, only to be blocked by a frozen dialog box.

To be fair, these Ajax13 applications—like all the other products in this comparison—are beta software. The Ajax13 suite does have some laudable features, namely clean interface design, fast core-application load times, and a well-populated user forum. However, these few positive features can't make up for some crippling bugs, curious feature omissions, bizarre load and save dialogs, and a general lack of stability. Ajax13 might be fine for Web-focused hobbyists

Microsoft Office Live Workspace: A WINNING STRATEGY?

Microsoft may have been slow to respond to the flood of Web-based competitors to Office, but it isn't hard to see why. A Web-based version of Office could cannibalize the existing (and profitable) sales of Office products, but doing nothing will simply cede a potentially lucrative future market to Microsoft's competitors. After realizing that Web-based office applications aren't going away, Microsoft has developed what it believes to be a winning strategy: "Software plus Services." Described as a mix of the company's existing client-based software with newer server-based applications, the objective of the Software plus Services strategy is to maximize the benefits of both mediums, teaming the security, speed, and reliability of existing offline Office applications with online services that provide document sharing and collaboration.

The first tangible manifestation of Microsoft's strategy is Microsoft Office Live Workspace (shown in Figure A), an online service (currently in beta) that lets Office users upload and share Office documents. There are some caveats: Users are required to have a version of Office installed in order to edit and save documents, and the lack of online editing capability is a curious oversight.

Based on my experience with the beta version, Office Live Workspace provides some interesting features (especially the ability to store common documents for later editing at a different location with a different PC), but lacks others—such as the absence I mentioned of the ability to create and edit documents online, a feature that all the products in this comparison offer. The interface should be familiar to Office users, and as a first stab at providing for Web-based sharing of Office documents, it's a passable effort.

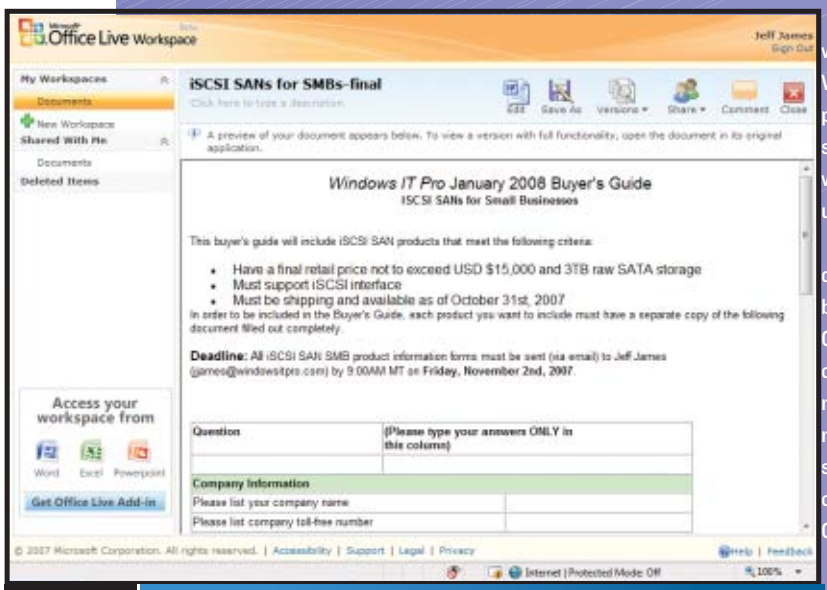

Figure A: Office Live Workspace

"Office Live Workspace will provide anywhere-access to Office documents, including Word, Excel, and PowerPoint files," Jeff Raikes, president of Microsoft's Business division, has said. "In other words, these documents will go wherever people go when they're away from their usual desktop."

Granted, the ability to upload and share documents has been done before (specifically, by Google), but the tight integration between Office and Office Live Workspace could address criticism that Office doesn't offer robust document-sharing functionality. The Office development team hasn't been idle, and we're bound to see more updates and improvements over the coming months and years. The next version of Office might still be a long way off, but it's clear that tighter integration with the Web will be a given.

InstantDoc ID 98103

Table 1: Online Office Suites Comparison

Product	Google Docs	gOFFICE	ThinkFree Premium	Zoho Office Suite	Ajax13
Price	Standard edition is free; Premier Edition is $50 per user, per year	$0.99 per user, per month	Free	Free	Free
Storage Space for Documents	2.75GB per account for standard edition; 25GB per account for Premier Edition	Unlimited	IGB per account	IGB per account	IGB per account
Word Import Capability	Yes	No	Yes	Yes	Yes*
Word Export Capability	Yes	No	Yes	Yes	Yes*
Excel Import Capability	Yes	Yes	Yes	Yes	Yes*
Excel Export Capability	Yes	No	Yes	Yes	Yes*
PowerPoint Import Capability	Yes	No	Yes	Yes	Yes*
PowerPoint Export Capability	Yes	No	Yes	Yes	Yes*

*Features didn't function during testing.

who have use for some of its more esoteric features, but anyone else should give this online office suite a wide berth and look elsewhere.

Are the Days of Microsoft Office Numbered?

Can competing online office suites truly replace the ubiquitous Microsoft Office? If you're an IT manager at a medium to large enterprise, the answer is a definitive no. As promising as these applications are, they lack the depth of content, robust security features, and massive support infrastructure that midsized-to-large enterprises need. Because ThinkFree Premium comes closest to reaching those goals for light-duty business use, I've designated it my Editor's Choice. (But don't count out Zoho and Google: At their current rate of development, both the Zoho office suite and Google Docs might have launched more updates and improvements to their products by the time you read this.) Only ThinkFree Premium, Google Docs, and the Zoho suite were able to load and allow editing of all three sample documents. Ajax13 and gOFFICE are outmatched in nearly every category in this comparison.

For small-business and personal use, the best online office suites in this comparison can be attractive solutions. As an alternative, IT pros running on a tight application budget—or those who prefer to keep their office applications offline and local—might take a look at the open-source alternatives to Microsoft Office: OpenOffice.org, IBM Lotus Symphony, and Sun Microsystems' StarOffice. Each is based on the OpenOffice.org code base, and most provide the bulk of the features that Office does at no cost. (A StarOffice license costs $69.95 per user, who can install that software on 5 machines.)

As promising as these applications are, they lack the depth of content, robust security features, and massive support infrastructure that midsized-to-large enterprises need.

Whether we're discussing online Office workalikes or products like OpenOffice.org, it's clear that there are now more options for business desktop applications than ever before. Microsoft Office still dominates the market, but changes are coming. Office Live Workspace might be a passable stopgap for Office users who want to share documents online, but Microsoft clearly needs to do a better job of integrating the existing Microsoft Office suite with the Internet. The days of Microsoft ruling the desktop application market virtually unopposed are over. We've seen only the opening skirmishes of what will undoubtedly be a long battle over how people should create, edit, and share documents between computers and across the Internet. The ensuing competition will not only be entertaining to watch but will also signify that consumers have more products and solutions to choose from—and that's always good news.

InstantDoc ID 98104

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c. Norton Ghost™
d. None of the above

2 The new Symantec Backup Exec 12 multi-product platform provides integration with:

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c. Backup Exec™ System Recovery Option.
d. The new Symantec Online Storage™ option.
e. All of the above.

3 Business data volumes are growing at a rate 40-50 percent per year which makes it harder for organizations to meet strict recovery point objectives without an efficient:

a. CEO.
b. Backup and Recovery Solution.
c. CRM solution.
d. Vacation Calendar.

answers on back

ANSWERS

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Group Policy Tools: Easing the Pain

Help is on the way

"There's no reason Group Policy shouldn't be easy to use," says SDM Software CEO and Group Policy MVP Darren Mar-Elia. If you're in the 22 percent of IT pros who admit to "winging it" as they configure and manage Group Policy, you might be surprised to hear that statement. Many IT pros have found it difficult to find a specific setting in Group Policy, to design Active Directory (AD) organization units (OUs) with Group Policy in mind, to set up user and computer groups to work with Group Policy, to troubleshoot non-working Group Policy Objects (GPOs), and to back up the GPO infrastructure.

That a significant number of IT pros acknowledge being somewhat clueless about Group Policy—even as they use it—surprised Group Policy solution provider NetIQ. The company surveyed IT pros about how they use Group Policy and published the results in 2007. According to Sacha Dawes, senior manager of product marketing at NetIQ, that figure of 22 percent is evidence of the lack of available native tools for managing Group Policy, including "the severe lack of change control."

In a conversation with *Windows IT Pro* magazine in the fall of 2007, Dawes noted that 58 percent of survey respondents said they'd experienced an unplanned outage from a Group Policy change and that their troubleshooting time ranged from 45 minutes to more than 6 hours. And more than half of the respondents also said that they had no system set up to alert them to a Group Policy problem or anomaly—their "strategy" was simply to wait for an incident to occur.

Group Policy experts, solution providers, and users agree that Group Policy can get you into a lot of trouble if you don't use it properly. They differ on what Microsoft's role is in managing this technology and what vendors can best do to help fill in the gaps. They also have different opinions on what impact Microsoft's soon-to-be-released Group Policy Preferences (technology from the acquisition of DesktopStandard) will have on the Group Policy tools market.

Most agree, however, that if you're not using Group Policy yet, you will be. Let's look at how Group Policy has evolved, why it has a reputation for causing IT pros to sweat bullets, and how Microsoft and third-party tools aim to help ease your Group Policy pain.

Group Policy Past and Present

Group Policy is a Windows feature that lets you centrally configure and manage computers and remote users in an Active Directory (AD) environment. You'll find Group Policy at work in the enterprise as well as in smaller organizations, such as schools and libraries, where it can be used to restrict users' actions and increase security.

Using Group Policy, you configure settings and store them in Group Policy Objects (GPOs). You create and edit GPOs with two tools: The Group Policy Object Editor (GPE) lets you create and edit one setting at a time, and the Group Policy Management Console (GPMC) lets you create and edit multiple settings at a time. After you create the GPO, you target or link it to an AD site, a domain, or, more typically, an organizational unit (OU). Then the Group Policy client pulls a list of GPOs appropriate to a machine and logged-on user and applies the GPOs. The GPOs enforce your organization's security settings and restrictions—and keep users from overriding them.

NetIQ's survey found that a surprising number of IT departments use Group Policy as a way to write fewer scripts. The more typical use, however, is for configuration management and for implementing server security and protection at the client level. Group Policy's usefulness is clear; what, then, makes it so difficult to master?

Consider that Group Policy began in Windows 2000 with just 500 settings. "You could wrap your brain around that," Microsoft's Lead Program Manager in Group Policy, Kevin Sullivan, says. Windows XP Service Pack 2 (SP2) had "800 additional settings. With Vista, it's 3,000. A slew more will appear in 2008."

Mar-Elia, of SDM Software, explains: "The way Group Policy was built, a team built the engine and created a framework. But the team didn't create a standard. So each product group went off and did its own thing." Sullivan offers the Microsoft perspective: "The Group Policy team doesn't decide what needs to be managed, for example, in Windows Media Player—but we do help them and test the Group Policy experience."

With the acquisition of DesktopStandard in 2006, Microsoft at least made it easier on itself in the Group Policy arena. DesktopStandard's GPOVault Enterprise became Microsoft Advanced Group Policy Management (AGPM) and was released in the Microsoft Desktop Optimization Pack (MDOP) for Software Assurance (SA) in July 2007. AGPM lets you manage GPOs by offering change control (e.g., the ability to check GPOs in and out for editing), the ability to compare two versions of a GPO, and role-based delegation. Microsoft is integrating DesktopStandard's PolicyMaker Standard Edition, Share Manager, and Registry Extension into the GPMC and renaming it Group Policy Preferences. It will be in Windows Server 2008 and offered as a Windows Vista SP1 download in the Remote Server Administration Toolkit (RSAT).

Two vendors whose product offerings don't overlap with Microsoft's Group Policy offerings comment favorably on the release of the newly acquired tools. Thor-

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björn Sjövold, CTO and founder of Special Operations Software (Specops), says Microsoft "more than doubled the number of Group Policy extensions with Group Policy preference extensions (GPPE). This is really good news because it shows that Microsoft believes in Group Policy and is committing to the technology." The former CEO of DesktopStandard, now CEO of Beyond Trust, John Moyer, adds, "What Microsoft is releasing with Group Policy Preferences is going to make Group Policy useful to the broader market and will help with standardizing desktops."

The settings in Group Policy Preferences "could potentially reach a staggering number," Microsoft's Sullivan says. "I mean that in a 'wow, look at my breadth of management' way. For example, it's easy to distribute binary data out to clients. It's a pretty exponential leap we're looking at."

Group Policy Preferences adds flexibility, Sullivan says. An administrator can create an image, deploy it to users, and users can change some of the preferences if the administrator allows it. "An admin can set or narrow down in Editor, turn on filter options, and look for commented settings." Sullivan points out the usefulness of being able to annotate GPOs with commented settings. "Today, if customers open a GPO and see a creation date of 2000, they don't know why it was created or who created it." Another feature in Group Policy Preferences is what he calls "starter GPOs." What he refers to is architecture that supports a baseline application. "You can create starter GPOs with canned settings and another admin can use those canned settings as a starting point" to configure a new GPO.

Jason Leznek, Microsoft Senior Product Manager for Windows Client Manageability, adds, "The other thing that Group Policy Preferences lets you do is richer targeting. Group Policy Preferences lets you set Windows Management Instrumentation (WMI) filtering or go beyond, and it's in a GUI. You can have check boxes; you can specify situations for settings; you can have multiple settings in one GPO."

According to Sullivan, Microsoft jumped on those feature changes that provided best customer value and didn't step on partners. Sullivan says his team asked customers, "What do you want to do in Group Policy?" The answer was that they wanted to do everything they could on their systems. "Group Policy Preferences provides application extension," Sullivan notes. "Partners can go in through the core and add and enrich."

Third-Party Solutions

You'll find several big players in the Group Policy arena and some smaller ones. Tools from third parties tend to fall into two main areas—those that extend what you can do with Group Policy and those that help you manage Group Policy.

Tools that extend Group Policy. Within the extension area are tools that add Group Policy functions. Examples of such functions include software deployment and asset inventory. Two vendors in this arena are Beyond Trust and Specops.

Beyond Trust uses the concept of least privilege to help administrators configure applications to run on desktops. "We get apps that require admin privileges to run on the desktop where they don't have administrative privilege," CEO Moyer says. He notes the impact of a recent US Office of Management and Budget mandate: "Federal agencies must move to standard configurations for Vista and XP, which means no more local administrator accounts. The local administrator account undermines all settings. It undermines what you're trying to do with Group Policy. We see the need to exploit this concept, developing new products and new versions."

As a former strategic Group Policy partner of DesktopStandard, Specops offered tools that didn't overlap with DesktopStandard's and that don't overlap with Microsoft's releases. Specops founder and CTO Thorbjörn Sjövold, says that, besides DesktopStandard, Specops is actually the only winner among the Group Policy Extension ISVs when it comes to Microsoft's Group Policy Preferences offering.

Tools that extend Group Policy include the following:

- Beyond Trust Privilege Manager—lets administrators use Group Policy to configure applications so users can launch them without having administrator privileges. It includes the ability to let enterprises operate with User Account Control (UAC) turned on or off.
- FullArmor Endpoint Policy Manager—uses an organization's existing Group Policy infrastructure to provide real-time management and enforcement of endpoint policy settings by pushing Group Policy settings to client computers that might not connect often to the domain; it also provides auditing and reporting for compliance.
- FullArmor GPAnywhere—lets administrators create portable policies from Group Policy settings and settings provided by IntelliPolicy for Clients to enforce policies on devices outside AD.
- Specops Command—combines Windows PowerShell with Group Policy, making it possible to execute PowerShell scripts on any number of computers.
- Specops Deploy—uses a Group Policy client-side extension (CSE) that replaces the built-in Group Policy software installation (GPSI) functionality in Windows.
- Specops Inventory—uses Group Policy to provide detailed data to track Windows-based IT assets.
- Specops Password Policy—removes the obstacle of the single password policy per domain in Group Policy.

Tools that manage Group Policy. Within the management area, you see tools that focus on specific management functions—such as troubleshooting, reporting, and security—and tools that offer many manage-

"What Microsoft is releasing with Group Policy Preferences is going to make Group Policy useful to the broader market and will help with standardizing desktops."

—John Moyer, former CEO of DesktopStandard, now CEO of Beyond Trust

ment functions across the board. Mar-Elia, of SDM Software, approaches Group Policy by conceiving of his products in three "buckets": troubleshooting, management, and reporting. "I decided the first thing I wanted to do was get tools for troubleshooting." His second product was something he'd wanted to do for a long time. Editing GPOs required Group Policy Editor (GPE); Microsoft provides Group Policy Management Console (GPMC), and there was some scripting, but it was geared toward the GPO. He wanted to make a Group Policy Software Development Kit (SDK) and expose settings. The result was the company's scripting toolkit.

He has two additional products ready to release: One is Group Policy Backup and Recovery. "GPMC provides backup and recovery as an afterthought. I'm trying to make it more of an enterprise-strength solution, with backup and restore links." The other is Desktop Policy Manager, which rides on the scripting toolkit. With it, small-to-midsized businesses (SMBs) can manage Group Policy by using a Web interface that walks people through how to define settings and shows them in profiles. According to Mar-Elia, it hides the linking. "Instead of thousands of settings, the user sees a dozen. Not everyone has to see the complexity of GPMC—we shield them from that."

Gil Kirkpatrick, CTO of NetPro, says, "Smaller organizations are just now beginning to experiment with Group Policy. I talked to a group of SMBs about AD backup and recovery, and very few were using it. It looked complicated to them." He says, however, that we'll see many smaller businesses getting into Group Policy. "I think that's what's driving a lot of the introduction of Group Policy tools." In the past, he says, "management tools didn't scale well to the SMB area and weren't intuitive. Microsoft built the platform services well, then gave you a crappy interface and left it to the ISVs to fill in." NetPro's tools cover the AD realm and include specific Group Policy management tools, such as GPOADmin. It's not yet possible to be an all-NetPro shop, though additional offerings are in the future.

Using Group Policy, Kirkpatrick says, "needs to be a controlled IT process, a process that's standardized." The other need is "to be able to delegate Group Policy creation or setting. Native tools don't let you delegate the ability to manage Group Policy."

About Microsoft's recent entry of the DesktopStandard product version, he says, "We had just released GPOADmin, which competed with DesktopStandard's product—but Microsoft split that product in two." As he understands the Microsoft offering, "It doesn't help you much with respect to management, but it does have a nice UI. It's not like Microsoft solved the management problem in Group Policy. Vendors will just have to be more innovative." NetPro's GPOADmin "expanded features and added workflow. You can delegate and let others make changes and an email goes out to higher administrators who can approve and apply the changes. It doesn't make sense for shops with one IT guy, but it's necessary for large shops and is in line with IT Infrastructure Library (ITIL)."

Tools that help you manage Group Policy include the following:

- NetIQ Group Policy Administrator—offers a change management process for GPOs, including offline management, versioning, workflow and delegation, the ability to replicate GPOs, and auditing and reporting capabilities.
- NetIQ Group Policy Guardian—alerts administrators when certain Group Policy changes occur, details and documents Group Policy change history, and offers change tracking.
- NetPro ChangeAuditor—adds audit visibility beyond native logs with coverage for GPOs and nested groups in addition to real-time auditing and reporting of AD, file system, and Exchange changes.
- NetPro GPOADmin—lets you automate change management tasks by configuring workflow approval processes that include the ability to do offline edits to GPOs as well as GPO commenting, tracking, version control, backup, scheduling, and change auditing.
- Quest Software Quest Group Policy Extensions for Desktops—lets you use Group Policy to implement and enforce endpoint security and includes tools that extend Group Policy to manage desktops, including the ability to configure Microsoft Office applications and to manage Microsoft Outlook remotely.
- Quest Software Quest Group Policy Manager—adds version control and a new UI to its GPO change management solution, which includes archiving and rollback, a multilevel approval process, and the use of PowerShell to automate Group Policy management tasks.
- SDM Software GPExpert Backup Manager for Group Policy—lets you manage the backup and recovery of GPOs and GPO links in your AD environment.
- SDM Software GPExpert Scripting Toolkit for PowerShell—helps you automate Group Policy management using PowerShell.
- SDM Software GPExpert Status Monitor—lets Help desk administrators find out quickly when Group Policy isn't working by referring to desktop event logs that record successes or failures in Group Policy processing.
- SDM Software GPExpert Troubleshooting Pak—helps administrators troubleshoot and resolve problems in Group Policy processing.

Group Policy in Your Future

With its acquisition of DesktopStandard and the resulting new Group Policy–related offerings, Microsoft is giving more attention to configuration and management difficulties that have plagued Group Policy users. As third parties build more features into their Group Policy products, those tools will expand on what Microsoft has done.

Sjövold, of Specops, says, "Microsoft's renewed commitment to Group Policy will most likely encourage more ISVs to build solutions on top of Group Policy." Peter Beauregard of Beyond Trust concurs: "We look at what [Microsoft's] doing, and it gets people excited about Group Policy." According to NetPro's Kirkpatrick, "Microsoft had a gaping wound with respect to management of Group Policy. They've put a good bandage on it. But they're not going to have a team of 20 developers working on updating Group Policy Preferences." He adds, "There's still lots of room to innovate."

Mar-Elia, of SDM Software, also sees room for growth: "There's a ton of untapped potential, stuff that Group Policy could do better—the engine could be more resilient, you could have more robust reporting, and you could add the ability to fail over to another location." He adds, "We'll see XML start to permeate Group Policy" as a more unified way of describing configuration.

InstantDoc ID 98087

Brent Kerby, Product Marketing Manager for AMD's Server/Workstation Division, and Ward Ralston, Senior Technical Product Manager of Microsoft's Windows Server Division, discuss energy efficiency and reducing the industry's environmental impact.

EXECUTIVE INTERVIEW

How do energy-efficient technologies contribute to an organization's financial bottom line?

Ralston: The power bill is the second largest datacenter expense, only trailing the phone bill. Hence, most IT departments are discovering the value of developing an energy strategy. Energy-efficiency technologies can reduce costs, reduce datacenter management demands, and free-up resources. With energy prices expected to keep rising, efficient technologies will be even more significant to the IT budget. Environmental sustainability is a fundamental, long-term business strategy for Windows Server.

Is AMD committed to reducing its environmental impact?

Kerby: AMD is committed to managing the environmental impact of both its products and operations. Specifically, AMD has taken action to purchase renewable energy, maximize energy efficiency, and lower costs and reduce environmental impact through its technology design, manufacturing innovations, and facilities design and operations.

What are AMD's short-term and long-term goals related to reducing its environmental impact?

Kerby: AMD is focused on three things:

1. outsourcing energy supplies with lower global-warming impact;
2. optimizing existing manufacturing processes, associated facilities, and technology upgrades; and
3. lowering gas emissions with new facilities and new equipment.

Long term, we are committed to continued innovation toward products that boost processor performance, and lower power consumption and continued work with the industry on environmental issues.

AMD has demonstrated its commitment to energy efficiency and environmental stewardship by partnering in voluntary initiatives, including the EPA's Climate Leaders program, Energy Star® and the Green Power Partnership. In 2006, AMD became one of the founding members of the technology industry coalition, The Green Grid, which is dedicated to promoting energy-efficient computing in the data center.

How does AMD assist customers in reducing their environmental impact and increasing energy savings?

Kerby: Our commitment to energy efficiency spreads throughout the technology ecosystem, and to customers, helping address power concerns at a global level. One way we manage our influence on the global climate is by providing customers with energy efficient technology solutions, because from our perspective, energy-efficiency is just as important as speed and performance in computing innovation. In real terms, AMD is helping reduce business energy costs for server processors by up to 30-50 percent. The technologies and products we design to help customers build more energy efficient products include:

1. The latest generation of AMD Opteron™ processors are geared toward maximizing computing power in the datacenter, while minimizing power consumption. Power-efficient Quad-Core AMD Opteron processor-based systems, utilizing DDR2 memory and Direct Connect Architecture with integrated memory controller, can consume less power at the wall than comparable systems.
2. Dual Dynamic Power Management™ (DDPM) provides independent power supply to the cores and memory controller, allowing them to operate on different voltages, as determined by usage.
3. The innovative Enhanced AMD PowerNow!™ Technology strengthens the per-watt performance capabilities of the AMD Opteron processor. It also increases platform investment protection by reducing the strain on datacenter cooling and ventilation systems.
4. AMD's CoolCore™ Technology, can reduce energy consumption by turning off unused parts of the processor. AMD Virtualization™ (AMD-V™) technology for virtualization enables multiple operating systems and applications to run simultaneously on the same server, resulting in a more efficient use of hardware and a significant reduction in energy used.

What features in Windows Server 2008 help consumers manage power consumption?

Ralston: Windows Server 2008 is Microsoft's most energy efficient server system to date. There are three main areas where Windows Server 2008 can provide power savings. First, organizations will see the most direct power benefit from Hyper-V's virtualization capabilities. With consolidation of up to eight underutilized servers onto one physical server, organizations can immediately see significant power savings. Second, Windows Server 2008 has the ability to throttle power to hardware components that consume large amounts of power. The CPU, for example, can account for as much as 45 percent of server power. Windows Server 2008 continually evaluates the CPU load and can reduce the CPU power by as much as 50 percent. Third, the next generation of multi-core CPUs can extract four to eight-times the processing power without increasing CPU power consumption.

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WINDOWS SERVER 2008

THE SOUL OF WINDOWS SERVER 2008: Server Core and Hyper-V

by Karen Forster

In Windows Server history, each release has been notable for some key technology. Windows 2000 Server was the Active Directory (AD) release. Windows Server 2003 was the security release.

When planning began for Longhorn Server (now Windows Server 2008), Microsoft was preoccupied with Linux. Consequently, the original plans lacked significant innovation: Longhorn Server was an unexciting revision of Windows 2003 with some manageability enhancements. As time passed, the corresponding Longhorn client (now Windows Vista) release continuously slipped, holding back Longhorn Server.

Finally, in 2005, because the original features conceived for Longhorn Server were finished (and to appease Software Assurance customers) Microsoft announced a new cadence of a "minor" release to follow two years after each "major" release such as Windows 2003. The result was Windows Server 2003 R2. R2 was notable for clearing the stage so that the actual Longhorn release could introduce some really interesting technology: Server 2008 debuts a new roles-based management paradigm enabled by componentization of the OS; but the features this release will be notable for are Server Core and native virtualization, Hyper-V (code-named Veridian).

Just as each Server release has been noted for a technology, so has each release's development been led by a Microsoft engineer. Windows NT was fathered by Dave Cutler. Win2K finally shipped thanks to Brian Valentine. Windows 2003 bears the imprint of Dave Thompson. Responsibility for Server 2008 rests on Bill Laing, general manager of the Windows Server division.

In a recent conversation, Laing discussed Server 2008's evolution, candidly commenting about the development of key features, lessons learned, what he thinks might be hard for some users, and what surprised him.

The Role of Roles

Forster: What were your goals for Server 2008?

Laing: We always have the basic goals of improving reliability, security, scalability, but the notion of role-based deployment was a big change for Windows. We wanted the server so you could configure it by role, or by workload. The big Aha! moment was that customers actually say "roles." We didn't make that word up; it came back to us.

PHOTO BY DAVIS FREEMAN

Forster: Didn't Windows 2003 start moving toward roles?

Laing: We had Manage Your Server and Configure Your Server, but it wasn't a natural tool you left up the whole time. Now we literally don't include the bits for undeployed roles in the directory. They're on the disk, but if you don't install the role, the code for that role is not even there.

Forster: What are the implications of role-based deployment?

Laing: The way I think about it is you're reducing the surface area, which helps you with management because you're only exposing the things you need for the role. If you don't install Media Player, you don't have to pay any attention to it—whether it's managing it, or patching it, or whatever. I think of how easy it is with Windows 2003 to turn on File Server. Well, now you have to consciously go through the act of creating a file server role. You're not accidentally going to create shares, for example.

Forster: Do roles enhance security?

Laing: I'd love to claim it makes Windows Server more

secure. It's a tough thing to claim. But there are fewer moving parts. So the surface area has come down and it should improve security.

Server Core

Forster: The most important innovation is probably Server Core, the stripped-down version of the OS with no GUI. How did Server Core happen?

Laing: Customers told us they wanted it—and I was pleasantly surprised at how much we were able to do in a first release. Actually, the people who had started doing the initial work came from the Embedded Systems group. They'd been thinking about Windows in embedded environments. They'd been doing a lot of analysis and had done maps of different layers of the OS.

Forster: Untangling the dependencies within Windows Server must have been daunting. How did you deal with that?

Laing? When we initially went into componentization, naively, we thought there would be maybe 2,000 components in the OS and we'd just pick and choose the ones we wanted. The problem is you have to test all the ways the components can be combined, so you really have to choose fairly big building blocks. It was clear to me that we could only manage a few layers initially.

Forster: What were the challenges of applying the Embedded Systems team's work to Windows Server?

Laing: If you build an embedded OS, it's deployed in the context of, say, a Point of Sales terminal. It's not some general-purpose thing like an OS that then gets deployed in many scenarios. The people building the terminal can choose their components, integrate the system, and that's it. So we walked this fine line between how many components do you want and the complexity problem that occurs because components can be assembled in different ways. That's why we went for Core, plus—as we used to call it—ROS (Rest of the OS), which was the next building block. That was the difference between Server Core, and then Server without the roles, and then each role being separate, and then ideally each feature.

Hyper-V

Forster: Hyper-V was a late addition and actually isn't a finished part of this release [As I wrote this article, a beta of Hyper-V had shipped in December and another beta was scheduled to ship with Server 2008, with the final Hyper-V set to release within 180 days.] How did Hyper-V come about?

Laing: Around late 2003, we acquired Connectix (Virtual Server and Virtual PC). At that time, people thought of virtualization as an option rather than a core strategy for the company. The initial model was to add Virtual Server 2005 R2 to provide a virtual hosting model. Then came research groups, such as Xen (we actually contributed research into Xen), and the hypervisor model. And the semiconductor industry was developing enhancements to support virtualization. We said, "That's a core feature of the OS." That was the change in our thinking—that virtualization was a core feature of the OS.

Forster: Will Hyper-V drive demand for Server 2008?

Laing: Oh, yeah, I think it will. That's probably the main new thing—most other things that we've done are somewhat evolutionary. That's a big-ticket item that people will go for. And the fact that we support Windows 2003 and Red Hat and SUSE Linux on Hyper-V makes it interesting.

Lessons Learned

Forster: What lessons will you take from this release?

Laing: Betas are important, but you don't get deep insight back from betas. If you do stupid things and you have obvious bugs, you get feedback. But we got most out of deep engagements: TAP [the Technology Adoption Program], the EEC [Enterprise Engineering Center]. In fact, I would increase our investment in those kinds of programs over time because it's a very rich interaction. [For details about the EEC, see "What You Need to Know About the Microsoft Enterprise Engineering Center," July 2003, InstantDoc ID 39163.]

Another lesson is that you have to be flexible and have a structure that lets you add or remove things—like it was pretty seamless to add virtualization to the plan. It was technically a lot of hard work, but it impacted the virtualization team, the Server Manager team, and overall project management, but that was about it.

Forster: What will be hard for users to learn in this release?

Laing: Server Core has had a lot of positive feedback, but I wonder how many people are really used to having no GUI—just command-line scripting of everything. Certainly a group of hard-core people will love it, and we'll get better as we get PowerShell on it.

Forster: What surprised you about this release?

Laing: I was very surprised how popular the RODC [read-only domain controller] is, and that came from people pushing it in directions I didn't expect. I had a narrow picture of it at the beginning: It was interesting for branches, basically. But people have been pushing it into the front-end Web server so they can push policy out of it. It surprised me how popular that was because it's a complicated thing to do and a lot of people are deploying that.

Perspective

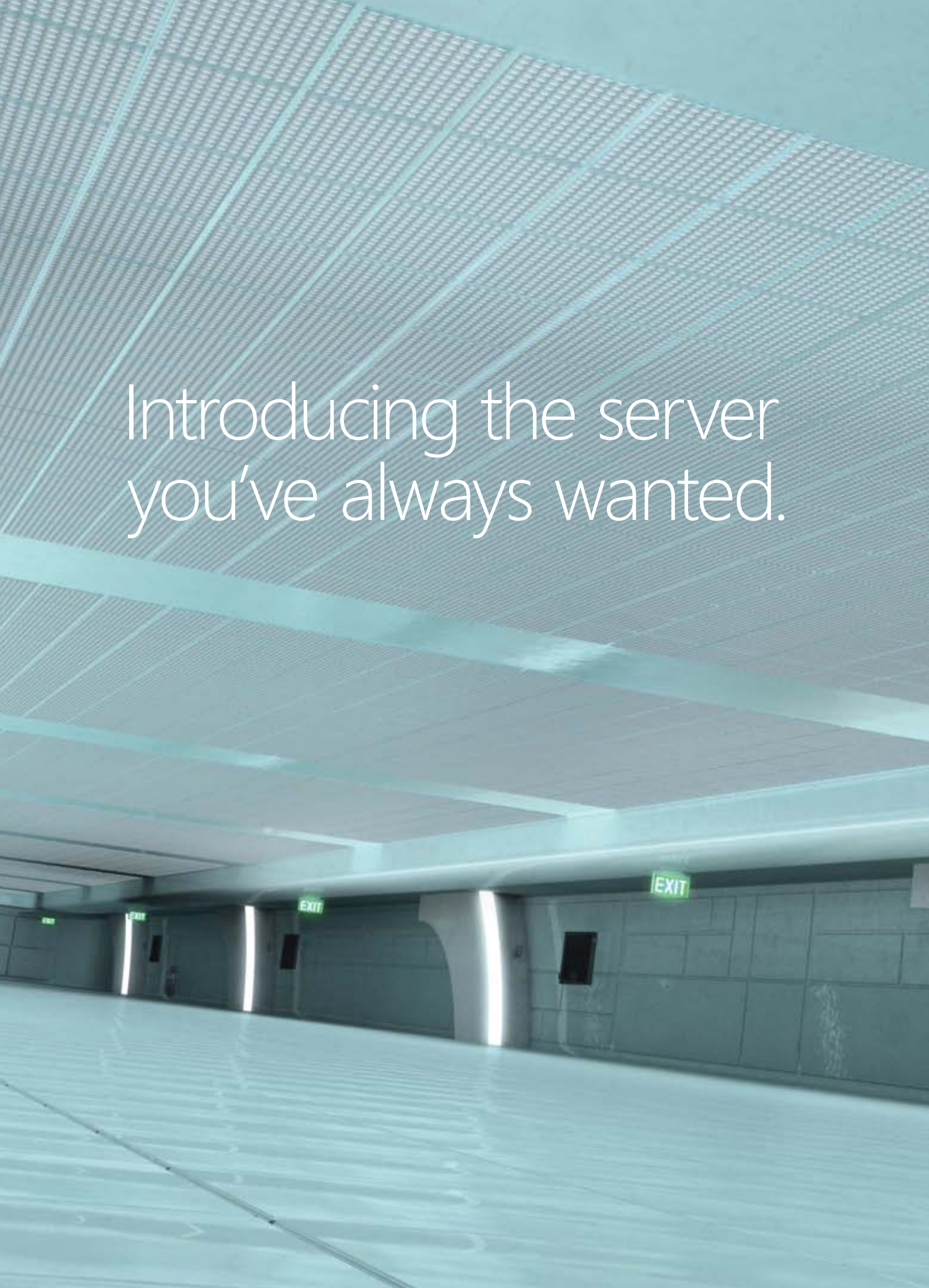
Windows 2000 was notable for AD. But industry old-timers also remember it as the long-delayed, *not*-Windows-NT-5.0 release. Thanks to Vista, the Longhorn release cycle will be recalled as suffering from delays and do-overs. But Server 2008 benefited from market developments over the past five years as Microsoft dealt with its Linux paranoia and recognized virtualization's significance. Nobody will remember Windows 2003 R2 (the original vision for Longhorn), but Server 2008 will be noted as the Server Core and virtualization release. Sometimes delay is a good thing.

InstantDoc ID 97953

Did You Know?

Bill Laing came to Microsoft in 1999 after an Internet boom-era stint as CTO of AltaVista. Laing had spent the previous 17 years at DEC, where he was responsible for VAX clusters and multiprocessing. He came to Microsoft as the architect of Windows 2000 Datacenter Edition, then managed several projects for Windows Server 2003, including IIS, clustering, and Network Load Balancing.

Karen Forster
(karen@windowsitpro.com) is group editorial and strategy director for *Windows IT Pro* and *SQL Server Magazine* and former director of Windows Server User Assistance at Microsoft.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WINDOWS SERVER 2008

New read-only domain controller tightens branch office security

Active Directory Enhancements IN WINDOWS SERVER 2008

by Guido Grillenmeier

Windows Server 2008 contains a variety of enhancements to Active Directory (AD) services. A standout AD feature change is the new read-only domain controller (RODC). As the name indicates, this enhancement adds a read-only mode for DCs, so you can't write changes to the AD database, and you can replicate only one way from other DCs. However, unlike the Windows NT Server 4.0 Backup Domain Controllers (BDCs), which might come to mind, an RODC can be configured to store only the passwords of specified users and computers. This limitation reduces the risks in case an RODC is compromised. The Server 2008 RODC feature, because it has the potential to reduce attack vectors thus improving physical security, will have a major impact on how you deploy and manage DCs in branch offices and the perimeter network (aka the DMZ).

Before I examine the RODC, I'll show you other enhanced AD features in Windows 2008. I'll walk you through the AD functional levels, both the domain functional levels (DFL) and the forest functional levels—FFL). This should give you a good understanding of the requirements for deployment of RODC and other new options, such as Fine-grained password policies (FGPP) and DFS replication for SYSVOL, which I'll cover here. In addition, I'll discuss changes made to DNS in Windows 2008 so that the DNS service works with smoothly with RODC.

For a quick overview, see Web Table 1 (www.windowsitpro.com, InstantDoc ID 98061) which lists the RODC and other important enhancements to AD.

Windows Server 2008 Editions Supporting RODCs

The x86 (32-bit) and x64 editions of Server 2008 feature the RODC mode in all editions (Standard, Enterprise, and Datacenter). However, because the Itanium edition of Server 2008 doesn't support the AD Domain Services feature, Itanium also doesn't support RODCs. On all Server 2008 versions, you can deploy RODCs on the Server Core install option. (For details about Server Core, see the Learning Path on page 37.)

InstantDoc ID 98063

AD Functional Levels

The RODC requires at least FFL2 (Windows 2003). What does this mean? Let's look at the background of AD functional levels. AD functional levels were introduced with Windows Server 2003 to avoid conflicts between AD features specific to each OS version. Such conflicts can occur when multiple OS versions are deployed on DCs in an AD domain or forest. Functional levels are especially important when you want to introduce changes that affect the AD replication mechanism or other domain- or forest-wide features that downlevel versions of the Windows Server OS don't understand.

For example, suppose you're upgrading from a Windows 2000 (Win2K) forest, which is functional level 0, to a Windows 2003 forest. After all DCs in a domain are upgraded or replaced with Windows 2003 DCs, you can increase the domain's functional level (DFL) to DFL2 (Windows 2003). DFL2 enables features such as DC Rename and the ability to write the last logon timestamp. After you switch all domains in a forest to DFL2, you can finally upgrade the entire forest's functional level (FFL) to FFL2 (Windows 2003). FFL2 introduces features such as transitive forest trusts, domain rename, and linked value replication (LVR). LVR is a major improvement for the replication of large multi-valued attributes such as group membership. With LVR, if you make changes (e.g., adding or removing a member to or from a group) to a long list of values, only those changes are replicated to other DCs, instead of replicating the whole list of values with every change of the list, as Win2K DCs do.

Note that many new features in Server 2008 AD don't have a specific requirement for a DFL or FFL, but a minimum of DFL2 and FFL2 is desirable. Microsoft made an effort to ensure implementation of RODCs in domains hosting Windows 2003 DCs. This allows companies to deploy RODCs without first having to upgrade the whole domain or forest. But expect some Windows 2003 hotfixes along with Server 2008 to help make the two DC versions work smoothly with each other in the same domain. (For information on deploying RODCs in a forest containing Windows Server 2003 DCs, see the Learning Path on page 37.)

Four new features are enabled when you switch to DFL3 (Server 2008). Two of those affect AD design: the ability to assign different password policies to users in the same domain and the use of DFS replication for SYSVOL. No new AD features are enabled after you switch the forest to FFL3 (Server 2008)—i. e., once all DCs in the forest are running Server 2008. However, switching to FFL3 means that all domains in the forest must run Server 2008 DCs and that no domains or DCs with a legacy OS can be added to the forest. See Table 1 for a summary of new AD features by functional level.

Fine-Grained Password Policies

For OS versions prior to Server 2008, an AD domain can have only one password

Names for AD Services Change in Windows Server 2008

A minor but important Active Directory (AD) change in Windows Server 2008 is one that will take some getting used to. To better differentiate the versions of AD, Server 2008 introduces new names for important services. Table A shows these name changes.

InstantDoc ID 98062

Table A: New AD Service Names

Old	New
AD: Active Directory	AD DS: Active Directory Domain Services
ADAM: Active Directory Application Mode	AD LDS: Active Directory Lightweight Directory Services

Table 1: New AD Features per Functional Level

Domain or Forest Functional Level	New AD features with Windows Server 2008
Forest functional level (FFL) 2 (Windows 2003)	Read-only DCs
Domain functional level (DFL) 3 (Server 2008)	Fine -grained password policies Support for DFS replication for SYSVOL Domain-based DFS scalability and security enhancements AES 256 support for Kerberos protocol
FFL 3 (Server 2008)	None (other than ensuring that no new legacy DCs or domains are added to forest)

Table 2: Password Settings Attribute Values

Password Setting	Attribute Value
Common name	My-ServerAdmin-PSO
Password settings precedence	10
Reversible encryption	False
Password history	24
Password complexity	True
Minimum length	15
Minimum age	00:00:05:00 (5 minutes – all the time-values have to be entered in this dd:hh:mm:ss format)
Maximum age	30:00:00:00 (30 days)
Lockout threshold	10
Lockout observation window	00:01:00:00 (1 hour)
Lockout duration	99:00:00:00 (99 days)

policy that applies to the user accounts in the domain. The password policy determines rules for password length, expiration date, and complexity for every account in the domain. Because these settings are defined via a Group Policy Object (GPO—i.e. the domain's Default Domain Policy), many administrators thought they could apply multiple password policies simply by adding different GPOs at different organizational unit (OU) levels in the domain. However, these GPOs applied only to the computer's objects located in the respective OUs and would thus affect only local accounts on those computers. Many companies found this situation disappointing and confusing.

Server 2008 changes this limitation by introducing Fine Grained Password Policies (FGPP). This feature is available only when all DCs in a domain are running Server 2008 and the domain has been switched to DFL3 (Server 2008). Although DFL3 still won't let you apply different password policies to different OUs, DFL3 does let you define different password policies directly to a user account or to a group. Note that these policies also allow you to set different lockout rules. So, for example, you can set sensitive accounts to lock out after fewer attempts than with ordinary user accounts. To reduce the overall management effort, the best practice is to specify policy at the group level rather than the user level.

Because users can be members of multiple groups, potentially more than one of which is assigned a password policy, Server 2008 AD includes a feature to determine the resulting policy for any user. In case no policies have been assigned to the user or any of the user's group memberships, the default domain policy applies. This feature gives companies flexibility in setting password policies. Although most companies have learned to live with the pre-Server 2008 limitations of a single password policy per domain, some organizations have deployed different domains just to allow creation of different policies. With Server 2008, you can use FGPP instead. Companies can consolidate domains previously used for different password policies and eliminate the hardware and operational costs associated with additional domains. Most companies will value the ability to enforce tighter policies for sensitive accounts in a domain, such as the administrative accounts and those used by services.

You manage the new password policies via Password Settings objects (PSO) created in the Password Settings Container in the system container of an AD domain. Currently, no native GUI or scripting tools are available from Microsoft to manage PSOs. Although ADSI Edit is not the sexiest GUI to work with for this purpose, this tool, which is now installed natively on every DC, works well to allow easy creation and management of PSO objects. Other UIs and new PowerShell cmdlets might be made available by Microsoft in the future, but already there are various tools available for free on the Internet to download and manage PSOs. See the Learning Path for more information on tools.

Using ADSI Edit to Create PSOs

Using ADSI Edit, you can create PSOs in five steps:

1. Ensure that all your DCs in your domain are running Server 2008 and that you've switched to Server 2008 domain functional mode (for example, by using the Microsoft Management Console–MMC–snap-in AD Users and Computers).

2. Start Adsiedit.msc and connect to the default naming context (DC=<your domain>), then browse to the following container: CN=Password Settings Container, CN=System,DC=<your domain>

3. Right-click the Password Settings Container object and select New, Object.

4. Use the Create Object wizard, to create a new msDS-PasswordSettings object. Create the object with the attribute values shown in Table 2. The resulting new Password Settings Object, My-ServerAdmin-PSO (along with other settings), requires specified users to enter a 15-character password that needs to be changed every 30 days. To take effect, the PSO still needs to be applied to user or group objects, which is the next step.

5. Apply the newly created PSO by viewing the properties of the My-ServerAdmin-PSO object in ADSI Edit and editing the msDS-PSOAppliesTo attribute. Enter users or groups (i.e., those that users must be a member of) to apply the policy to your target users. For example, I created a group called My-ServerAdmins.

Learning Path

WINDOWS IT PRO RESOURCES

"Sampling Server Core," InstantDoc ID 96438

"Understanding Trust Transitivity," InstantDoc ID 93714

MICROSOFT RESOURCES

"AD DS: Read-Only Domain Controllers"
technet2.microsoft.com/windowsserver2008/en/library/ce82863f-9303-444f-9bb3-ecaf649bd3dd1033.mspx?mfr=true

"Domain Controllers Running Windows Server 2003 Perform Automatic Site Coverage for Sites with RODCs"
technet2.microsoft.com/windowsserver2008/en/library/c0ec828b-7da2-4627-91a8-2a5312a3ceaa1033.mspx?mfr=true

"Identity and Access in Windows Server 2008"
microsoft.com/windowsserver2008/ida-mw.mspx

"Manage Windows Server 2008 DNS role"
forums.microsoft.com/TechNet/ShowPost.aspx?PostID=1916586&SiteID=17&pageid=0

"RODC Features"
technet2.microsoft.com/windowsserver2008/en/library/0e8e874f-3ef4-43e6-b496-302a4710ie611033.mspx?mfr=true

"RODC Frequently Asked Questions"
technet2.microsoft.com/windowsserver2008/en/library/e41e0d2f-9527-4eaf-b933-84f7d3b2c94a1033.mspx?mfr=true

Tools for managing PSOs:

"ADSIedit Overview"
technet2.microsoft.com/WindowsServer/en/library/ebca3324-5427-471a-bc19-9aa1decd3d401033.mspx?mfr=true

"PSOMgr"
joeware.net/freetools/tools/psomgr/

"View a Resultant PSO for a User or a Global Security Group" (desget command with effective pso option)
technet2.microsoft.com/windowsserver2008/en/library/21a35cbb-398d-4ab4-a6f8-39b76fb0323b1033.mspx?mfr=true

Using DFSR for SYSVOL

A key enhancement of Windows Server 2003 R2 was a new, efficient file replication service. Surpassing its predecessor in integration with DFS, the new file replication service was called DFS Replication (DFSR). A major new feature was the ability to restrict the replication traffic to just the *changes* in files between two DFS replicas. So if a file of many hundred megabytes is changed by just a few bytes, DFSR ensures that only the changed bytes are replicated to the various replication partners. Previously, with NT File Replication System

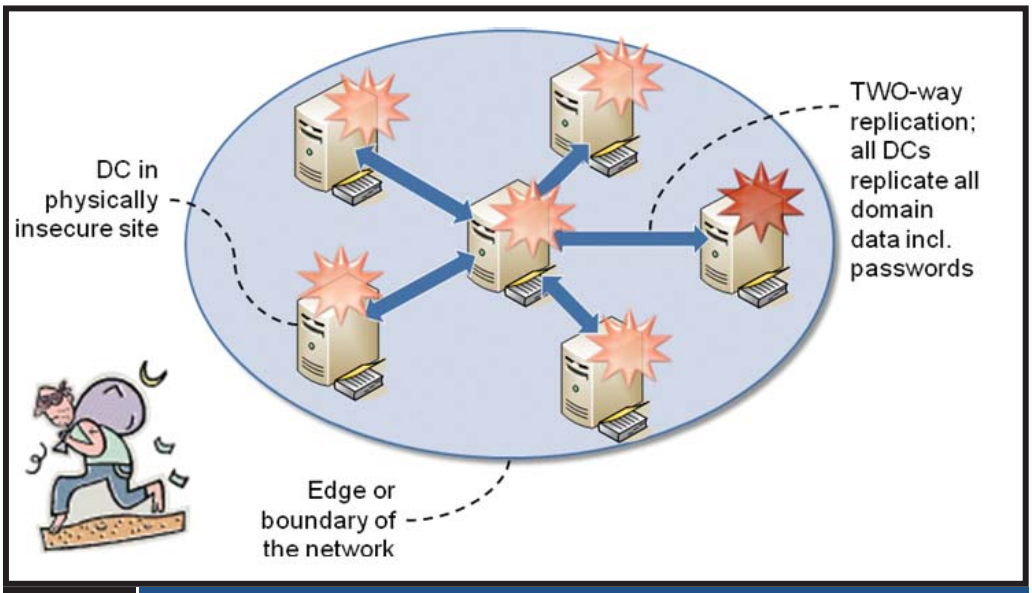

Figure 1: Windows 2000/2003 branch-office DCs can negatively impact the whole AD forest

(NTFRS), any change in a file (including changes to attributes such as a file's NTFS permissions) caused the whole file to replicate. Now Server 2008 adds even more scalability enhancements to DFSR, such as an increased number of parallel file replication threads, and the removal of the 5,000 DFS targets limit per AD-integrated DFS root. (Now DFS roots can have an unlimited number of DFS targets.)

Ever since the availability of DFSR in Windows 2003 R2, AD administrators had hoped to leverage this new service for SYSVOL, after upgrading all DCs to Windows 2003 R2. However, this was not possible—SYSVOL had to keep using the inefficient NTFRS engine for replicating their Group Policy changes and the contents of the scripts folder (NETLOGON share). The inefficiency of NTFRS was actually one cause for AD architects to sometimes design multidomain forests, merely to reduce the NTFRS traffic if a large company had many slow high-latency network links that DCs needed to replicate across.

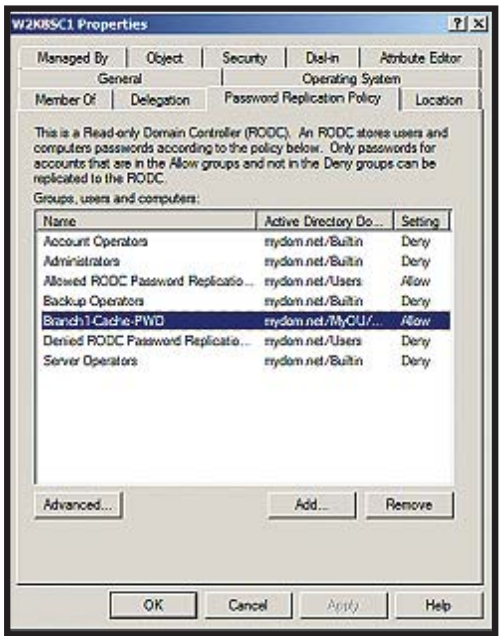

Figure 2: Password replication policy of an RODC

Server 2008 will finally make DFSR available for replication of SYSVOL between DCs. All DCs in a domain must be running Server 2008, and the domain must be switched to DFL3 (Server 2008). However, in contrast to some other replication-related features, the switch to DFL3 does not automatically change the replication of SYSVOL from NTFRS to DFSR. A fairly cumbersome procedure, which uses the new DfsrMig.exe tool available on every DC, lets you create a new DFS root for the SYSVOL content. This new root uses DFSR while the original SYSVOL still uses NTFRS. As part of the migration process, you copy the original SYSVOL contents to the new SYSVOL folder, called SYSVOL_DFSR by default.

After you switch to DFL3 and migrate to DFSR for SYSVOL, the SYSVOL share will leverage the new SYSVOL_DFSR folder. From then on, the SYSVOL share's contents will replicate much more efficiently. If you're planning a new AD forest, inefficient SYSVOL replication will no longer be a reason to design a multi-domain forest.

DNS Changes

I don't have the space here to explain all of the DNS changes in Server 2008. (See the Learning Path on page 37 for information on Server 2008 DNS.) For this overview, you need to know that DNS has been updated to allow read-only zones, which are required to support the DNS service with the RODC role. The new read-only zones are similar to secondary DNS zones, except that the read-only zones are integrated in AD and can only be hosted on an RODC. As you might guess, a read-only DNS zone won't accept dynamic updates from clients. So a special mechanism for RODCs ensures that clients are directed to the nearest writable DNS server for dynamic DNS registrations and update requests. Within five minutes after telling a client which server to update the DNS information on, the RODC's DNS service will try to connect to that same DNS server to instantly replicate the DNS changes to its own database.

Another new AD-related DNS feature allows clients to locate DCs in the "next closest site" when they can't connect to a DC in their own site, avoiding potentially slow connections to other remote DCs during failover. This new capability, a function of the DNS clients on Windows Vista and Server 2008, uses site-topology information and site-link costs stored in AD to determine the next closest site, before querying DNS to provide a DC in the respective site. This feature has been back-ported to Windows XP in the latest service pack. It can be enabled via Group Policy Object (GPO):

- Path: Computer Configuration\Administrative Templates\System\Net Logon\DC Locator\DNS Records
- Enable settings: "Try next closest site"

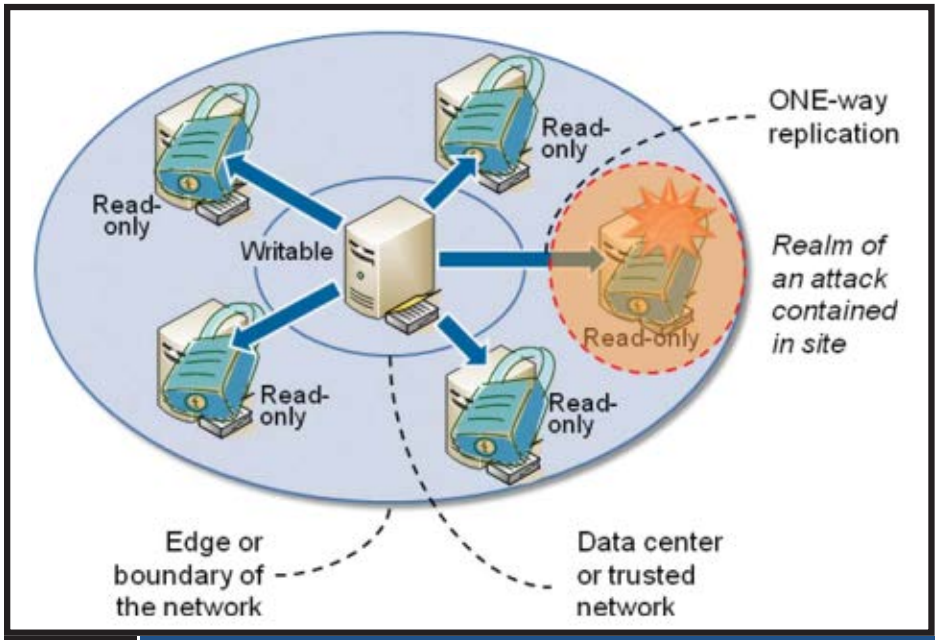

Figure 3: Using Server 2008 AD to restrict writable DCs to trusted networks

What's the Big Deal with RODC?

A challenge with any Win2K or Windows 2003 AD deployment has always been the placement of DCs in remote sites (such as branch offices) that aren't necessarily as physically secure as a company's data center.

Except for special Operations Master (FSMO) roles such as the Schema Master and the PDC emulator, all DCs prior to Server 2008 are basically equal. Administrators of any Win2K or Windows 2003 DC can write changes to the AD database and can replicate these changes to other DCs in their AD domain or forest. Therefore changes performed on a single DC can affect the whole domain or even the whole forest. A malicious user with physical access to a DC, say, in a branch office, can fairly easily make an elevation-of-privilege attack to damage or even destroy a company's entire AD forest and dependent services.

As shown in Figure 1, the malicious change on the rightmost branch-office DC replicates out to the central hub DC, which then replicates that change to all other DCs in the enterprise. Furthermore, because all DCs always copy the full AD domain partition, including the passwords of all users and administrators in that domain, a compromised DC would also allow a thief to perform password cracking attacks against the DC's AD database, enabling additional remote attacks. (See that thief in Figure 1? He just stole a DC.)

The Server 2008 RODC was designed to reduce such risks. You can use an RODC in locations that might not offer the same physical security as a datacenter but require rapid, reliable, and robust authentication services, even if the network link to a remote datacenter is not available. Companies that require such authentication quality in their branch offices no longer have to deploy ordinary writable DCs into these sites. Organizations now have the option to deploy RODCs, which by default don't replicate passwords locally and never replicate local changes back to any other DC. RODCs have a one-way only replication connection agreement with their writable DC replication partner. Various changes in Server 2008's underlying replication architecture ensure that this agreement can't be changed. For example, RODCs aren't members of the Enterprise Domain Controllers security group, which grants writeable DCs various write permissions to the AD database.

Password Replication Policies (PRP) determine which passwords to replicate to an RODC. Determining how to configure PRPs for your company will be a key challenge for the management of RODCs. PRPs are managed per RODC and provide a list of groups, users, or computer accounts that are either allowed or denied permission to cache their password on an RODC. The PRPs are stored with the computer account object of the respective RODC in AD, as Figure 2 shows.

Deploying RODCs is an extremely attractive proposition to increase security in branch office and DMZ deployments. As Figure 3 shows, you would deploy writable DCs in a Server 2008 AD infrastructure only in fully trusted networks (data centers). You can safely deploy RODCs in edge networks. As a result, an AD infrastructure attack like the scenario shown in Figure 1 is now limited to the attacked RODC in the branch office. And because the RODC doesn't store any administrator user secrets (passwords) by default and will typically be configured to cache only the passwords of the users in the RODC's site, a stolen RODC doesn't pose the same risk to a company that a fully writeable DC does.

An RODC can also be a Read-Only Global Catalog (ROGC). Note however, that while ROGCs are supported to be used as GAL servers for Outlook clients, they aren't supported as GCs for use by Exchange servers. This will have an impact on administrators who want to deploy the RODC in a branch office but also maintain a local Exchange server.

You can compare the features of an RODC with those of a proxy server. If a user is authenticating in a site that has an RODC, the user's client will locate this RODC like any other DC and attempt to authenticate to the RODC. In fact, clients usually won't know if they're talking to a writeable DC or an RODC, because the RODC will retrieve all the data it needs on behalf of the client. When the user authenticates for the first time to this RODC, the RODC will need to talk to a writeable DC (usually across the WAN to a DC in a hub site) and authenticate the user against this writeable DC. If the

RODC is allowed to cache the user's password hash, as determined by the RODC's PRP, the RODC will be able to fully authenticate the user the next time without needing to contact a writeable DC.

RODCs have other attractive features that distinguish them from writable DCs: For example, you can delegate local administrator rights (or other roles) to domain users or groups to a specific RODC, without granting the users any special rights in your AD domain. You do so by using the managedBy attribute of an RODC computer object or by assigning local roles through NTDSUTIL. This capability saves you from requiring a domain admin account for maintenance tasks on branch-office DCs that can also be performed by users with lower privileges. (This includes the task of promoting new DCs.) This capability is restricted to RODCs.

More to Learn

Server 2008 debuts several major AD enhancements, which are introduced this article. RODC is clearly the feature that Microsoft spent most effort on, as you can see by looking at the changes RODC required Microsoft to make to Server 2008's underlying replication architecture. The Learning Path lists some further resources on Server 2008 AD enhancements and RODC.

InstantDoc ID 98061

Author's note: *This article is based on the RC1 release of Server 2008.*

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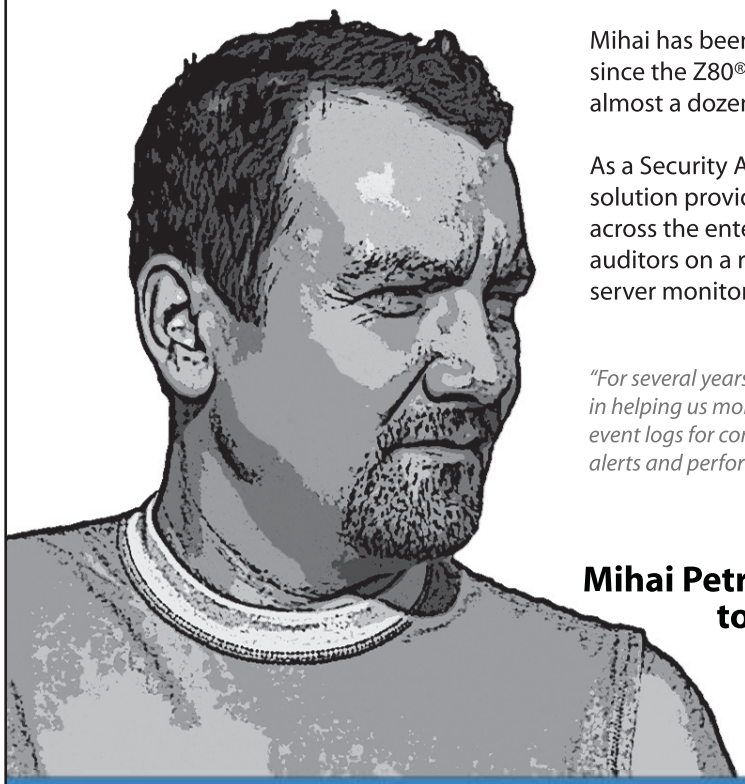
Early Adopter Shares Windows Server 2008 Insights

Windows Server 2008 is off in the distance for many IT pros, but for intrepid early adopters like IT services firm Heartland Technology Solutions, business needs are driving a leading-edge migration. In this month's IT Pro Hero, we talk with Arlin Sorensen, the firm's president and CEO, about his company's experiences testing Server 2008 and the benefits he expects to gain from the upgrade. Check out the interview at InstantDoc ID 98122.



Mihai has been working with computers for almost 20 years, since the Z80® days. Fluent in four languages, Mihai holds almost a dozen certifications, including the CISSP®.

As a Security Analyst for a multi-national human resources solution provider, he manages over 600 Windows® servers across the enterprise and has to report to compliance auditors on a regular basis. Security, documentation, and server monitoring are his greatest concerns.

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WINDOWS SERVER 2008

Volume Activation IN WINDOWS SERVER 2008

This new technology replaces the Volume License Key

by Sean Deuby

If you plan to deploy business versions of Windows Vista or any version of Windows Server 2008—which you'll do eventually—you need to understand Volume Activation. A VA infrastructure is necessary for companies with more than a few hundred Vista or Server 2008 systems. Without this infrastructure, every volume-licensed build of these systems will eventually fail. In this article I define VA, explain how it works, and offer straightforward recommendations for deploying it in common situations.

Volume Activation Overview

Volume Activation 2.0 (VA2) is a major rework of Microsoft's original volume licensing technology. In volume licensing, one Volume License Key (VLK) was used to activate an unlimited number of systems. This method required strong security to ensure the VLK was never compromised; if a key was "leaked" and became available on the Internet, Microsoft had to deactivate the key, and all the systems that used the key had to be rekeyed. VA2 avoids this problem by requiring every Vista or Server 2008 build that's configured for volume licensing to activate with Microsoft, either directly or by proxy.

In VA2, volume builds of the OS use one of two activation methods: Multiple Activation Key (MAK) or Key Management Service (KMS). A MAK is similar to a VLK, but it has some important differences. A MAK has a limited number of activations associated with it, whereas a VLK is unlimited. Every activation instance that uses a MAK must verify with Microsoft; no verification is necessary with the VLK method. KMS is a client/server system that activates multiple clients without requiring any action from the

A Volume Activation infrastructure is necessary for companies with more than a few hundred Vista or Server 2008 systems.

system's users. Unlike in a MAK activation, a system that uses KMS doesn't have to contact Microsoft individually. Rather, the KMS hosts themselves activate the license with Microsoft on the client's behalf. Microsoft expects that medium and large organizations that use VA will use KMS to activate most of their systems.

Before we delve into KMS and MAK activation in detail, let's look at the five possible license states for VA clients. (Note that only the first state requires no action.) The first and most common state is Licensed, in which the client is activated and functioning normally. Next is Initial Grace or Out-Of-Box Grace; this period occurs after the VA client is first installed. Out-of-Tolerance Grace occurs when hardware changes on an activated system push the system beyond a tolerance level. Non-Genuine Grace occurs when a system that has the Windows Genuine Advantage (WGA) ActiveX control installed fails Genuine Activation. All of these license states have a grace period of 30 days. Finally, Unlicensed occurs when any of the grace periods expire. In the Unlicensed state, a system runs in reduced functionality mode (RFM).

Note that the Unlicensed state behavior is different in Vista SP1. If you're using a system that hasn't been activated and gone through the 30-day activation grace period, when you log on to the system on the 31st day, you'll see a dialog box on a plain black background. You'll have two options: Activate Windows now, which will bring up all the options to do so; or activate Windows later, which will take you directly to the desktop. Your desktop will appear as before, except you'll have a plain black background and a message in the lower right corner over the system tray telling you that your copy of Windows isn't genuine.

Key Management Service Architecture

The KMS VA system consists of one or more KMS hosts (servers) that activate clients configured to use KMS. These clients locate a KMS host by one of several methods and request the host to activate them. The KMS host uses a special KMS key to activate with Microsoft, then acts as a proxy to activate its own clients; the clients don't need to contact Microsoft to activate. A host can activate an unlimited number of clients. As a result, Microsoft generally provides only one KMS key for an organization. Microsoft designed the KMS system to be highly scalable so it requires a minimum of KMS hosts.

KMS-configured systems must renew with the KMS host on a regular basis, otherwise they'll eventually fall into the Unlicensed state and essentially be unusable until they reactivate with a KMS host. The reason such a critical piece of Microsoft infrastructure requires so few servers is that the Software Licensing Service has very loose requirements compared with other services. When a KMS client is first built (either a Vista client or a Server 2008 server), it has 30 days to activate. This initial grace period can be reset three times. During this period, the client tries every two hours to activate. After the client successfully activates, it attempts to contact a KMS host once every seven days by default to renew its activation another six months. Each client has a six-month countdown timer that resets whenever the client renews with a KMS host; if the client can't renew for some reason, the timer keeps counting down, attempting again every week, until the client either renews or falls into the Unlicensed state. So a client attempts to reach a KMS host approximately 25 times. Also, the 15-second Time to Live (TTL) value of each KMS request is extremely long by other services' standards and the data exchange is quite small, so the network proximity of the KMS host to the clients isn't especially important.

KMS Installation

KMS can be installed on Server 2008, Windows Vista, or Windows Server 2003 SP1. It's available on both x86 and x64 architectures for all platforms. No extra software is necessary for Server 2008 or Vista, but to run KMS on Windows 2003, go to the Microsoft downloads Web site (www.microsoft.com/downloads), search for "KMS on W2K3 SP1," then download and install either KMSW2K3_EN-US_x86.zip or KMSW2K3_EN-US_x64.zip. Both the KMS host and KMS client are part of Microsoft's Software Licensing Service (slsvc.exe)—but KMS on a Windows 2003 server is referred to as the Software Protection Platform service.

Although KMS is available on Vista, I don't recommend this configuration. Instead, I suggest that you use a KMS host on a server OS. Such a critical infrastructure service should be installed on an existing server or added as a regular production server.

The main utility to control a KMS host is a straightforward script, slmgr.vbs, which is located in the \system32 folder of volume license versions of Server 2008 and Vista. The most common switches you'll use are

- -ipk—Install product key
- -ato—Activate
- -dli—Display license information
- -xpr—Expiration date for current license state
- -skms—Direct connection (vs. auto-discovery)

The first step in installing a KMS host is to install a volume license version of the OS. A volume license OS version won't prompt you to provide a license key when you build it. When the installation is complete, use the following command to install the KMS key provided by Microsoft:

```
SLMGR.VBS -ipk <KMS key>
```

Note that the KMS key isn't a MAK. Don't give this key out indiscriminately; it's good for only six activations, intended for six KMS instances or rebuilds, for your entire company. Each of these instances can be reactivated as many as nine times. After you install the KMS key, you must activate it with Microsoft. This action authorizes, by proxy, all the activations the KMS host will perform. The most common way to activate the KMS host is by directly contacting Microsoft via the Internet. This method is called online activation, and is executed simply by entering

```
SLMGR.VBS -ato
```

If your KMS host doesn't have Internet access, you can call Microsoft and follow a mostly automated activation process. To find the Microsoft number to call, enter

```
SLUI.EXE 4
```

and follow the on-screen instructions.

KMS Location and Discovery

After your KMS host is up and running, your clients must be able to find it. You can forcibly point the clients to the host (called a *direct connection*), or you can let clients find the host themselves (called *auto-discovery*). To set up direct connection on a KMS client, simply run

```
SLMGR.VBS -skms <<KMS_FQDN or
  IP>[:<port>]
```

on the client. KMS_FQDN is the Fully Qualified Domain Name (FQDN) of the KMS host (or you can enter its IP address). You can also specify what port the client should connect to, if it's other than the default of 1388.

Auto-discovery is a more complicated matter. For auto-discovery, KMS uses the DNS SRV record to publish its service into a DNS zone. Following the _service._protocol format of the SRV record, a record for KMS would look like _vlmcs._tcp.mycompany.com.

When it performs auto-discovery, the KMS client queries DNS for a list of servers that have published the _VLMCS record for the zone it's a member of. DNS returns the list of KMS hosts in random order, and the client picks one and attempts to establish a session with it. If this attempt works, the client caches the server and attempts to use it for the next renewal attempt. If the session setup fails, the client picks another server at random. The KMS locator process works a little like the domain controller (DC) locator process (which also looks for an SRV record), but it's simpler. For example, the client can't look up KMS hosts by site because doing so isn't necessary for the simpler requirements of the KMS service. Nor does KMS use weight and priority, which are options available in the SRV record to sort the result list.

A KMS host configured for auto-discovery doesn't automatically publish SRV records to DNS in any zone other than the one in which it resides. This means you must manually publish SRV records into all other DNS zones—for example, the other child domains in a domain tree. To do so, you must enter each zone KMS should publish to in the HKEY_LOCAL_MACHINE \SOFTWARE\Microsoft\Windows NT\CurrentVersion\SL\DnsDomainPublishList subkey's REG_MULTI_SZ value. Use a separate line to enter each zone in which you want KMS to publish itself. Remember that the KMS host itself must have rights in the target zone to create these records, and that the zone must be able to resolve the host name in the SRV record. If you have many domains—especially domains that don't trust the domain your KMS host resides in—this configuration can become one more manual list that must be kept in sync with your active domain list.

KMS auto-discovery is integrated with DNS, not Active Directory (AD); it works just as well with non-Windows DNS as it does with AD-integrated DNS. Any DNS server that supports SRV records (per RFC 2782) and dynamic updates (per RFC 2136) will support KMS client auto-discovery and KMS SRV record publishing. BIND 8.x and 9.x support both SRV records and DDNS.

KMS Odds and Ends

A KMS host itself doesn't provide much information about its operation. Instead, a Microsoft Operations Manager (MOM) management pack for KMS is available at the Microsoft downloads Web site (www.microsoft.com/downloads). The management pack generates alerts for the major conditions that can cause KMS-related activation problems, such as initialization failures and DNS SRV record publishing failures. It also provides a wide range of reports on client activations through KMS.

Once activated, a KMS host will activate an unlimited number of clients. However, the host won't begin activating clients until it receives a certain number of activation requests from physical (i.e., not virtual) machines. This is called the *activation threshold*. Vista's threshold is 25 systems, whereas Server 2008's threshold is 5 systems.

Suppose you have an environment with 500 volume-licensed Vista systems and one KMS host on a shared production network. As these systems begin appearing on the network, they will attempt to activate with the host they've found, either through auto-discovery or direct connection. The host will record each attempt, but not activate the clients until 25 separate clients have contacted it. The original 25 clients, when not activated by the KMS host, will simply retry until the KMS host has reached its activation threshold, at which point they'll be activated normally. These thresholds are exclusive for each type; if KMS has reached its 25-client Vista threshold but not its 5-client Server 2008 threshold, it won't activate Server 2008 servers until that threshold is reached.

A KMS host doesn't track all its licensed clients; it records only the last 50 activations to make sure the service is working correctly. It also doesn't pay attention to other KMS hosts in the network or share activation information between them. No upper limit exists for how many activations a KMS host can perform after it reaches its activation threshold; volume licenses aren't a limited resource on its network. As many as six KMS hosts can be activated with one VLK, and each KMS host can be reactivated as many as nine times (e.g., if a KMS host must be rebuilt).

Using KMS rather than a MAK solution to activate clients has several advantages. First, KMS clients don't need Internet or telephone access to activate their systems; they just need to be able to communicate with a KMS host. Second, there's nothing to back up or restore on a KMS host. You simply rebuild, reinstall the VLK, activate, and it's ready to go. Third, the KMS infrastructure is very lightweight and scalable; one KMS host with a hot spare in case of failure can service many tens of thousands of clients. Ultimately, the deciding factor for how many KMS hosts you use isn't a matter of scalability; it's your network configuration and your political landscape. If a substantial number of your clients can't contact a KMS host because of network segmentation, you'll have to land another host. And because KMS is a critical part of your infrastructure, strongly independent business groups might want control over their own KMS host.

Although Server 2008 and Vista require different VLKs, a KMS host can hold only one activation key. So how can one key activate both Server 2008 and Vista systems? Microsoft created *key groups,* which is a hierarchy of licensing keys based on the products you purchased for volume license. The groups range from Vista to server groups A through C, where each server group increases in complexity (and cost). Vista key groups can activate only Vista systems. Server group A can activate Windows Web Server 2008 and

Learning Path

WINDOWS IT PRO RESOURCES

"Microsoft Licensing and Activation Tools Might Ease Your Pain," InstantDoc ID 95337

"Vista Licensing Changes Alienate Tech Enthusiasts," InstantDoc ID 93896

WINDOWS IT PRO FORUM THREADS

Vista Activation
forums.windowsitpro.com/web/forum/messageview.aspx?catid=247&threadid=83163

Vista Activation: KMS vs. MAK in large enterprise
forums.windowsitpro.com/web/forum/messageview.aspx?catid=247&threadid=6134

Vista; server group B can activate Server 2008 Standard and Enterprise editions, as well as Web Server 2008 and Vista. Server group C can activate everything—Windows Server 2008 Datacenter, Windows Server 2008 for Itanium-based Systems, Server 2008 Standard and Enterprise editions, Web Server 2008, and Vista. When you purchase volume licenses, you're provided with a key group that matches the products you purchase. Installing that key on your KMS host then activates all the less-expensive products.

The most important principle to remember when building a VA2 infrastructure is to keep it simple.

Multiple Activation Keys

MAKs don't require a specific infrastructure. Your company requests and pays for one MAK with a certain number of activations. You can activate the target system with the MAK in any of several ways—with an unattend file, manually from the Windows interface, or via a script. Every MAK installation must validate with Microsoft's activation servers to complete successfully. Typically you'd use *direct activation,* in which the client itself activates directly with Microsoft, either via the Web or by phone. The Web activation is simple and works in the same way as earlier activation methods do (e.g., Windows XP activation). Activating by phone requires that you call a phone number and read aloud or enter an alphanumeric sequence on your phone, after which an operator reads a sequence of numbers that you enter into the corresponding key field.

If your clients don't have direct access to the Internet (e.g., in a secured lab), or they don't have the administrative rights necessary for MAK activation, Microsoft offers a proxy activation method that uses the Volume Activation Management Tool. VAMT, which is available from the Microsoft downloads Web site (www.microsoft.com/downloads), is designed for installation on a notebook that can move between the closed network and a network with Internet access. When on the closed network, VAMT applies one or more MAKs installed on it to the Server 2008 and Vista clients it discovers. For more information about VAMT, see the step-by-step guide that's bundled with the VAMT installation files.

If you have to rebuild a system, you can use the same MAK as before—but its "number of keys used" will increment by one. Similarly, you can't reuse the same MAK as in the previous build. For example, if you receive a system from an OEM with Server 2008 or Vista already installed, the system has a preinstalled MAK that you paid for as part of the system cost. If you rebuild the system to your standard build, you can't reuse the MAK; you must use one of your own, essentially throwing away the OEM's MAK.

Design Principles

Although using KMS and MAKs can seem complicated and confusing, following a few design principles helps make sense of it all. The most important principle to remember when building a VA2 infrastructure is to keep it simple. A simple configuration is easier to create, configure, and maintain. In addition, you should try to minimize the number of KMS hosts you use. If technically and politically possible, have just one set of KMS hosts for the entire enterprise. Also, try to maximize the number clients that use KMS (and thereby limit the number of clients that use MAKs). Finally, minimize the number of VAMT proxy configurations. To follow these principles, it's helpful to divide your Windows systems into the following categories: the production network, secure networks with firewall access to the production network, isolated networks with little or no access to external networks, and disconnected clients.

Production network. This is your primary company intranet. Inventory the Windows environment's AD forests and domains on the production network, categorizing them as follows:

- Primary corporate forest(s)
- Secondary forests that trust one or more of your primary forests
- Untrusted forests (e.g., development, manufacturing)
- Workgroups

Secure networks. For secure networks with firewall access to the production network, assume no Internet access. Again, perform the Windows environment inventory; a secure network probably won't have as many categories as a production network.

Isolated networks. For isolated networks with little or no access to external networks, categorize the network as having fewer than 25 clients, or more than 25 clients.

Disconnected clients. Disconnected clients have no email access or any applications that require regular corporate network connections (e.g., a sales team's demo notebook computers).

Recommendations

I recommend that you use KMS with DNS auto-discovery for your corporate forest(s) and secondary trusted forests, because this configuration is the easiest to implement. Register KMS into all the other domains in your forest and trusted forests so that clients can use DNS to find the service. Assuming the majority of your clients are in these forests, this design lets clients immediately activate via KMS. This configuration also assumes your company has a centralized IT model with a limited number of untrusted forests, which is similar to Microsoft's environment—Microsoft has very few if any untrusted forests on their production networks. If you do have untrusted forests (e.g., development or test) on your production network, those administrators must manually register the KMS host's A records and SRV records for auto-discovery to work. The KMS host probably won't have rights to update DNS in an untrusted forest. Although adding records manually is simple, you must then manually update the records with the domain and forest configuration.

Workgroup clients on the production network should use KMS through auto-discovery, but its simplicity is a matter of which DNS servers the workgroup clients are using. If they use the DNS service of the KMS host's forest, they can easily locate KMS.

For secure networks with some access to the production network, use a layered approach. First, configure the firewall to allow TCP port 1688 so secure network clients can contact the KMS host. Then, if you use a name rather than an IP address (as recommended), the host must be able to resolve the name through DNS. Whether you use auto-discovery or direct connec-

tion for KMS depends on the network's DNS configuration; if the network has its own DNS, the network administrator must manually register the KMS host's A records and SRV records. Having a consistent DNS infrastructure throughout your company is important to avoid inconsistency errors and duplication of effort. Similarly, KMS port 1688 should never be exposed outside the company; access to a KMS host is the same as handing out free VLKs.

Secure networks without external access present a more difficult configuration. If the network has fewer than 25 clients, you must use MAKs and activate the clients via the VAMT utility. A problem with this approach is that you must, for example, allow notebook computers that have been on the external network onto the secure network. If you have more than 25 clients, you can use KMS and activate it over the phone. This approach has its own shortcomings, though, because handing out the KMS key to anyone other than a few trusted administrators isn't a secure practice. A variation on the secure network configuration is a secure network in which systems are rebuilt constantly (e.g., a client test lab). In such a situation, you might consider simply never activating the systems if they'll exist for fewer than 90 days, because you can use the slmgr.vbs script's rearm option (i.e., SLMGR .VBS /REARM) to reset the product activation timer a maximum of three times.

If your company uses a standardized build, a simple solution is to create two DNS Canonical Name (CNAME) records with a host name such as kms.yourcompany .com. Have these CNAME records each refer to a different KMS host, to create a basic round-robin configuration in which either of the hosts is randomly chosen. Configure your client build for direct connection, with the KMS name as kms .yourcompany.com. All the clients will then use kms.yourcompany.com all the time. You can control which KMS hosts this CNAME represents, and you don't have to deal with auto-discovery or with registration of the SRV record in multiple DNS zones.

Follow the Basics

VA can be confusing and complicated, but you'll need to use it if you ever plan to deploy Server 2008 or Vista. Although VA2 is far more complex than I can discuss in one article, following my basic design recommendations will let you implement it with a minimum of trouble. To become a VA2 expert, go to Microsoft's VA2 Product Activation page (www.microsoft.com/licensing/resources/vol/default.mspx) and download the VA2 planning guide.

InstantDoc ID 98153

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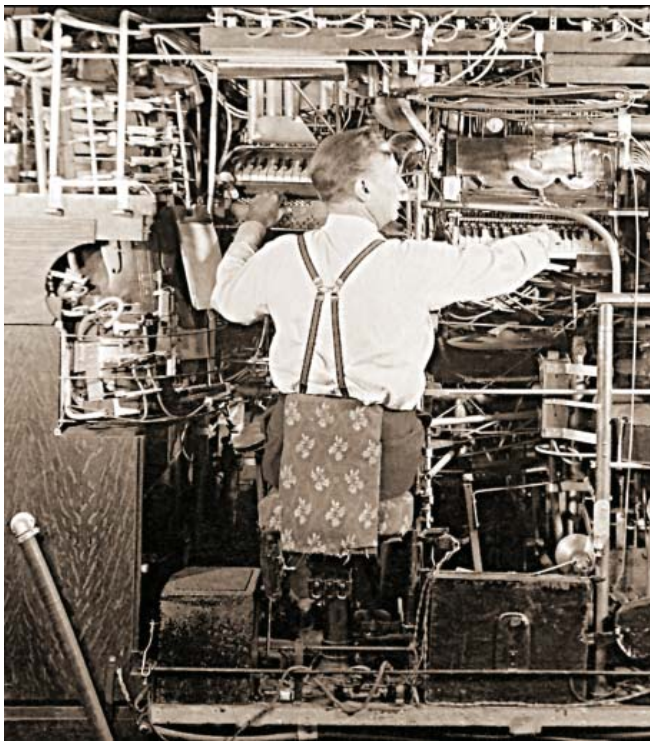
Best Practices for Managing User Data and Settings, Part 2



Heed these tips for unifying UDS management for Windows Vista and Windows XP users and addressing 4 key types of user data

by Dan Holme

Last month, in "Best Practices for Managing User Data and Settings, Part 1" (InstantDoc ID 97841), I began a discussion about the pieces you need to put in place to effectively manage user data and settings (UDS). The goal was to create a UDS-management framework—a combination of technology, people, and processes—to meet specific security, mobility, availability, and resiliency business requirements. In that article, I covered the server-side components of the framework. This month, I address the client-side components.

The goal this time is to unify UDS management for both Windows Vista and Windows XP users—something that isn't possible without some of the tips you'll find herein, such as registry-based folder redirection. Specifically, we need to address four types, or classes, of UDS that I call "normal data," "normal settings," "locally accessed data," and "unwanted data." Unfortunately, as you'll see, Windows provides direct support for managing only the first two types of data, which is why so many organizations struggle to put all the moving parts in place—some parts are missing!

Redirect User Data Stores

The first class of data I'll address is "normal data" that can reside in standard Windows data stores such as the Documents and Desktop folders. You can use redirected folders to manage normal data and meet your business requirements.

Redirected folders are a well understood, tried-and-true technology in Windows environments. You can redirect selected shell folders (e.g., Documents, Desktop) to shared folders on the network, and the result will be completely transparent to users. You implement most folder redirection through Group Policy, under User Configuration, Windows Settings, Folder Redirection. You should use the Group Policy Management Editor (GPME) on a Vista client to edit Folder Redirection Group Policy settings so that you can configure settings that will apply to both Vista and XP.

Although XP supports redirecting only four folders, Vista lets you redirect thirteen folders, as you can see in Figure 1, page 48. I highly recommend redirecting Documents and Desktop, as well as any of the new folders that Vista can redirect. As I discuss later, you can redirect the AppData folder, but using roaming profiles is generally a better management choice for AppData. Except in schools and other environments in which multiple users should have identical Start menus, I've never found it useful to redirect the Start menu.

Microsoft documents the steps for configuring folder redirection in its Help files. Rather than repeat those steps here, let's focus on bottom-line recommendations and tips. On the folder-redirection policy's Target tab, you can set the following recommended policy settings.

- Use Basic rather than Advanced folder redirection. Advanced folder redirection lets you redirect folders to different locations based on group membership. That capability might sound great, but there are other policy settings supporting a UDS framework that aren't similarly multi-valued. I recommend that if you need to redirect users to different servers, create separate GPOs filtered for each group.
- For the *Target folder location* of each folder redirection, choose the *Redirect to the following location* setting and enter the path *namespace*\%username%*foldername*, where *namespace* is the DFS namespace for UDS, and *foldername* is the name of the redirected folder—for example, \\contoso.com\users\%username%\Documents. (We created the DFS namespace in Part 1.)

On the Settings tab, you should change almost all the defaults.

- Clear the *Grant the user exclusive rights to Documents* check box. If this check box is selected, only the user has access to his or her data stores. As I'll discuss later, you should configure the root folder above all user folders with permissions that reflect your corporate information security policy. Those permissions should be inherited by individual user folders.
- Clear the *Move the contents of Documents to the new location* check box. If this check box is selected, a user's data moves automatically to the target location after you introduce the policy. The data move happens at the first logon and might take a significant amount of time for large folders. You should plan, control, and manage the migration of user data to the network folders; don't let it happen automatically.
- Select the *Also apply redirection to Windows 2000, Windows 2000 Server, Windows XP, and Windows Server 2003 operating systems* check box. Doing so will ensure that the folder-redirection policies apply to all Windows clients. This check box is available only for folders that XP can redirect.

Redirect XP Favorites and Media Folders

Although Vista lets you use folder-redirection policies to redirect all user data folders, XP won't let you use these policies to redirect folders such as Favorites, My Music, and My Videos. You can, however, use registry-based redirection to redirect these XP folders. In the XP registry, the HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\User Shell Folders key contains values for each of these folders. You can change the data of these values to redirect the folders to network locations. The resulting redirection is identical to folder redirection implemented through Group Policy.

In fact, I'll make it easy for you. How about a Group Policy administrative template that manages registry-based redirection of these folders? You can download the Registry-Redirection.adm file from www.windowsitpro.com, InstantDoc ID 98004. Load the file into a GPO that's scoped to apply to XP users. I recommend using registry-based redirection for Favorites, My Music, My Pictures, and My Videos on XP, even though you can use folder-redirection policies to redirect XP's My Pictures. For Vista clients, use standard folder-redirection policies.

When you redirect XP media folders, applications such as Apple iTunes and Windows Media Player (WMP) will automatically use the redirected folder. But what about users who are accustomed to opening My Documents and double-clicking a folder to access media? To accommodate those users, I recommend that after you migrate the contents of those folders to the network, you delete the actual subfolders in My Documents. Then, create shortcuts called My Music, My Pictures, and My Videos that point to the new locations. Those shortcuts will provide XP users with the visual links they use to browse to media. Of course, you might also choose *not* to redirect one or more of these folders based on your need to manage users' media files.

With folder-redirection policies managing all user data stores for Vista users, and a combination of folder-redirection policies and registry-based redirection for XP users, you can unify the experience of users who roam between computers running different OSs. Regardless of where the user logs on, he or she will have access to all data stores.

Roaming Profiles Manage Ntuser.dat and AppData

Now that you've redirected all user data stores and Favorites, you're left with the two remaining stores of user settings: the user's registry hive and the AppData folder—%userprofile%\Application Data (in XP) and %userprofile%\AppData\Roaming (in Vista). These stores, which I refer to as "normal settings," are best managed with roaming profiles.

Figure 1: Vista lets you redirect 13 folders

Roaming profiles got a bad rap in the days of Windows NT 4.0. Even in the 21st century, many organizations have had less-than-ideal experiences with roaming profiles, citing the size and synchronization of profiles as particularly problematic. However, properly implemented roaming profiles work very well.

Profile synchronization is quite efficient. At logon and logoff, Windows compares the server copy of the profile with the locally cached copy and synchronizes only files that have changed. However, if your Documents folder has thousands of files, scanning those files to identify what has changed can take a long time, creating a perception of slow logon and logoff processes. Additionally, the Desktop or Documents folders might have one or more large files. For example, PST files can be huge. Each time Microsoft Outlook touches a PST file, it changes that file's timestamp so that, at logoff, Windows considers it a changed file even when the contents of the PST file haven't changed. At each logoff, then, your PST files get copied to the profile on the server. Therefore, in most environments, it isn't appropriate to allow users' desktops and Documents folders to roam.

These two examples illustrate the problem of enabling roaming profiles without careful thought and design. It's important to exclude certain folders from roaming. Redirected folders are automatically excluded from roaming, so once you redirect the

The Essential Guide to Windows Server 2008

March 2008

By David Chernicoff

Windows Server 2008

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Since the beginning of the widespread adoption of computer technology in business there has been a common theme. Hardware and software technologies continually advanced, leapfrogging each other as new technologies were developed and deployed. This meant that IT was dealing constantly with one or two common issues; the first, and most annoying, was that software applications required the absolute newest, fastest, and most capable computers, and often were only marginally happy on that hardware; always wanting a little more power and capability than the current state-of-the-art hardware was able to deliver. The second was the reverse; hardware capabilities outstripped software requirements and IT felt that they were paying more money than they needed to for capabilities that they couldn't make use of in their server purchases.

In 2008 technology professionals find themselves at an interesting juncture; hardware and software technologies coming together to deliver a complimentary set of capabilities that allow for the deployment of incredibly powerful, mission-critical, line-of-business applications that are scalable, cost-effective, and can fully and efficiently utilize the power and capabilities of both hardware and software.

User Needs Drive Server Market

Let's look at the major user needs that are driving the server market in 2008; server consolidation, application consolidation, database-driven solutions, and business intelligence. These market forces all require the same underlying support; a powerful server operating system that can take full advantage of current and future hardware technologies, and, of course, hardware that can deliver on the promise of the operating system.

That operating system is arriving in the form of Windows Server 2008. With this next generation of the Windows Server system, IT is getting the answer to many of questions they have been posing over the last few years. Microsoft has continued to build on the ease-of-use delivered by the Windows Server platform, by adding features such as the new Server Manager console, which significantly simplifies the tasks involved in server setup and configuration while providing a central location for ongoing server management. And a new feature, Windows PowerShell, delivers a command-line control interface that allows an administrator to build command-line driven scripts to automate common and repetitive administrative tasks. Additional wizards have been added to simplify complex tasks such as installing clusters and deploying the operating system in network environments. While ease-of-use continues to improve, the operating system is also more secure and reliable than in previous versions.

Security is always an underlying concern for system administrators and with Windows Server 2008 they are getting an operating system that has been hardened against common security problems and system failures. The addition of technologies like Network Access Protection (NAP) means that administrators are able to lock down access to their servers and take a major step to ensure that only authorized users gain access to data on protected servers. While not a specific security solution, the Windows Server 2008 Server Core installation means that it is possible to deploy specific purpose servers that don't get a GUI or many of the points of potential attack that need to be secured.

Bring on Hyper-V

But if we were going to pick one feature of Windows Server 2008 that will have the greatest impact on IT, it has to be Windows Server Hyper-V. Hyper V is a hypervisor-based virtualization technology. With the ability to completely virtualize server hardware, Hyper-V becomes the enabling software technology for server consolidation, application consolidation, server scalability, and application availability, giving an administrator the ability to deliver virtual SMP servers to applications

In 2008 technology professionals find themselves at an interesting juncture; hardware and software technologies coming together to deliver a complimentary set of capabilities.

The capabilities built into the processors in the Intel-based servers already being purchased can now be better utilized by deploying Windows Server 2008 Hyper-V.

and operating systems as necessary. Hyper-V is not limited to virtualizing Windows Server; Linux and other operating systems running on x86 (both 32 and x64-bit) architectures can also be supported on the same hardware running Windows Server 2008 Hyper-V as the virtualization engine. And keep in mind that virtualization is not restricted to running high-performance, cutting-edge applications. Server consolidation often means trying to keep older server technologies and in-house applications running as well. So a virtualized server, running in a partition on a current, state-of-the-art technology machine, may be running a server operating system and application that is seven or eight years old.

This powerful software virtualization technology needs hardware that is equal to the task to really deliver optimal solutions to the IT user. This is where Intel's processor technology steps up to the plate with the latest generation of multi-core server processors and Intel Virtualization Technology (Intel VT).

Processors that include Intel VT (and the operating systems software that supports it) can take advantage of a set of processor hardware enhancements that allow the offloading of workloads to the system hardware that would otherwise be handled solely in software, improving performance, in some cases, to near-native performance levels. With the right software, Intel VT is also able to improve the reliability of virtualization, making for more reliable server consolidation solutions.

Multi-Core Technologies

Multi-core technologies also come to the fore with the new server operating system. While Windows Server has supported SMP systems since its introduction, applications that were able to take full advantage of SMP have been fairly rare and limited in scope. The introduction of multi-core processors exacerbated the problem from the point of view of IT; they were able to get significantly more powerful systems and lower relative costs, but there were few server applications that could take full advantage of the processor power being delivered. This is another area where virtualization really becomes a cost-effective solution; the capabilities built into the processors in the Intel-based servers already being purchased can now be better utilized by deploying Windows Server 2008 Hyper-V.

The Quad-Core Intel® Xeon® processor 7300 series, based on the Intel® Core™ microarchitecture, offers leading scalable performance and best-in-class virtualization for server consolidation. Tests have shown an increase of more than double the performance in virtualization and almost triple the performance benefit per watt of consumed power, over previous generations. The top of the line Quad-Core Intel Xeon 7300 series processors provide faster high-speed interconnects, support for larger system memory implementations and support for up to 32 sockets—which means 128 CPU cores using high-performance quad-core processors.

These advances mean that it is possible for OEMs to build server systems that can be used to virtualize dozens, if not hundreds of physical servers into a single platform, in many cases with no apparent performance hit to the end-users of the services provided by those virtualized servers. And it also opens the way for vendors to build next-generation applications that take full advantage of the servers and operating systems that are becoming available today.

Choice of Hardware Vendor Critical

But with server and application consolidation with Windows Server 2008 and current Intel VT (enabled?)multi-core processors it means that the choice of hardware vendor will become progressively more critical. As IT builds bigger, more consolidated systems the choice of OEM will become the driving factor in the selection of server hardware. The enterprise server IT environment has truly come full circle. From the days of big mainframe computers with enterprise service contracts and responsibilities we have worked our way through the independent adoption of all sorts of computing technologies and now find ourselves back to the point where the service and support model provided by the

server vendor has become paramount in the selection of enterprise servers.

This is where the experience and history of a vendor such as Unisys becomes valuable to the IT implementation. Unisys offers enterprise-class hardware for your server implementation, starting with their midrange ES3000 Enterprise Servers which offer 2- and 4-way high-performance mid-point server solutions, and ranging up to their ES7000/one Enterprise server, a rack mounted solution that is scalable to 32 Intel multi-core Xeon processors and 512 GB of memory. The server can be set up with up to eight partitions or run as a single 32-way computer, if your operating system choice supports it. It can be deployed as a single-server solution that can grow to meet the enterprise computing needs of your organization, adding capabilities as you consolidate more of your standalone servers and applications to this single server.

Many mission-critical solutions can benefit from architectures that incorporate scalable servers and other components designed for high efficiency and availability. When these best-of-breed components are combined using accepted methodologies, such as centralization and consolidation, and technologies, such as virtualization, superior results can be achieved. In enterprise Exchange environments, for instance, utilization and reliability is increased; footprint, power and cooling, and management expense is reduced; and total cost of ownership is optimized compared to more traditional federated topologies. Unisys also brings significant experience to the IT world in the process of building mixed workload consolidation solutions, as well as dedicated consolidation solutions for enterprise-scale server applications such as SQL Server. While the task of building a consolidated server environment can appear to be a straightforward one, if the enterprise is doing more than just consolidating file and print services, there are many issues that need to be addressed before and during the consolidation process that are far from clear. Attempting such a project using the trial and error method is unlikely to be cost-effective and would show significant benefits, both in costs and progress, from making use of the skills and expertise of an organization that has specialized in these types of migration.

Unisys server hardware ships with the Unisys Server management technology, which is an autonomic server monitoring tool designed to keep the server running at its peak health and performance. This tool does system monitoring, self-healing, and security and it improves high-availability and reliability. The tool can also do asset management and link to Unisys and third-party systems and operations management tools.

With Unisys solutions, technology, and deep mission-critical expertise, IT organizations can reduce the complexity of their IT infrastructure and deployments both by consolidating servers, services, and applications into smaller numbers of servers and by utilizing the high-availability, high-reliability service and support tools available to the user. A look at the software licensing models that are evolving in the marketplace, starting with Windows Server 2008, will show IT managers that forward-looking vendors are encouraging the use of large-scale virtualized environments as the direction that future environments should pursue.

With the release of Windows Server 2008 and current generation processor and server hardware, IT pros face a brand new set of challenges to their day-to-day jobs. The drive for IT will strongly focus on how to get jobs done more efficiently, how these new technologies can best be utilized, what vendors should be partnered with, and what direction the computing environment will be taking.

This next generation of server and operating system implementations offers an IT department the chance to make revolutionary leaps in the capabilities of the services they offer to their business, rather than the simple evolutionary changes that they have become accustomed to.

David Chernicoff is a Senior Contributing Editor for *Windows IT Pro* magazine. He has been writing computer-related features and product reviews for more than 15 years and is coauthor of *Microsoft Windows XP Power Toolkit* (Microsoft Press).

Unisys Enterprise Servers:
http://unisys.com/products/enterprise__servers/index.htm

Microsoft Windows Server 2008
http://www.microsoft.com/windowsserver2008/default.mspx

Microsoft Windows Server 2008 Hyper-V
http://www.microsoft.com/windowsserver2008/virtualization/default.mspx

Intel Virtualization Technology
http://www.intel.com/technology/platform-technology/virtualization/index.htm?iid=technology_virtualizationdescription+tabs_overview

Intel Multi-Core Technologies
http://www.intel.com/multi-core/index.htm?iid=tech_arch+body_multi-core

Unisys Embraces Virtualization Technology

In the following interview, Mark Feverston, VP, Microsoft Solutions; and Jim Boak, VP, Microsoft Strategic Alliance, talk about how Unisys solutions will incorporate Windows Server 2008.

Q: Mark, Unisys has long been known as a leader in the Windows enterprise computing space. How do you see that Windows Server 2008 will affect the position of Unisys in the marketplace?

Mark: It will enhance it! We have historically relied on Windows Server to provide a scalable operating system platform for our mission-critical, enterprise-class deployments. In fact, our joint engineering relationship with Microsoft dates back to the late 90's when we were one of the earliest supporters and champions of Windows Server Datacenter Edition. With the introduction of Windows Server 2008, we anticipate companies generating new, larger workloads, which is the "sweet spot" for our expertise and our technologies.

Q: What are some of these new workloads you are referring to?

Mark: A number of our enterprise customers have been asking for our assistance in addressing certain infrastructure optimization needs. In response, we have developed a number of solutions that apply our increasing family of server technology with Windows Server 2008 in a number of novel ways. We will have some exciting news around this shortly. But what I can share with you today is that we will be leveraging our extensive infrastructure optimization experience and enterprise server expertise to provide a new, robust and cost-effective solution based on Windows Server virtualization technology for large-scale desktop environments. We will also be announcing a solution for consolidating, securing and managing Microsoft Exchange Server 2007 environments. So stay tuned for more details over the next few months!

Q: That sounds great. But how about Unisys' current value proposition as it relates to server and datacenter consolidation?

Mark: A large proportion of our ES7000 family of servers has been deployed in server consolidation roles. The reason for this is easy to understand: Unisys mainframe design provides a balanced architecture and economies-of-scale supporting high-volume virtualization of infrastructure resources while reducing environmental and operating costs. In fact, Microsoft continues to be a major consumer of Unisys server technology in both its production as well as development environments.

Q: Jim, as Mark mentioned earlier, Unisys has long had a strategic relationship with Microsoft. But why work with Microsoft in the first place? What is the value of your alliance?

Jim: Through the Unisys and Microsoft Solutions Alliance, our two companies have established a strategic relationship that enables us to jointly drive high-value opportunities for our customers. By combining the deep industry expertise of Unisys with the interoperability and familiarity of Microsoft technologies, we are uniquely positioned to offer our enterprise customers the solutions and services that they need to build efficient systems, empower their people, and capitalize on new business opportunities. Our customers have come to expect a seamless experience when they purchase solutions that leverage both Unisys and Microsoft resources. Through our close working relationship, we deliver the exceptional customer experience that our clients demand. For more than 30 years, Unisys has been delivering enterprise-class, mission-critical solutions to maximize the importance of people and technology while driving business success for our clients in challenging industries. Unisys has thousands of successful enterprise customers on the Microsoft platform worldwide. Our alliance with Microsoft delivers significant benefits to our joint customers by providing highly secure, scalable Unisys solutions on the Microsoft platform. We work closely with Microsoft through joint engineering development and sales engagements, and our collaborative efforts are supported by dedicated resources in both companies.

Intel Brings Better Performance to Windows Server 2008

In the following interview, Mark Swearingen, Director of the Microsoft Program Office, talks about how Intel has worked closely with Microsoft to provide a powerful hardware foundation for Windows Server 2008.

Q: Intel has long been known as a leader in the Windows enterprise computing space. How do you see that Windows Server 2008 will affect Intel's position in the marketplace?

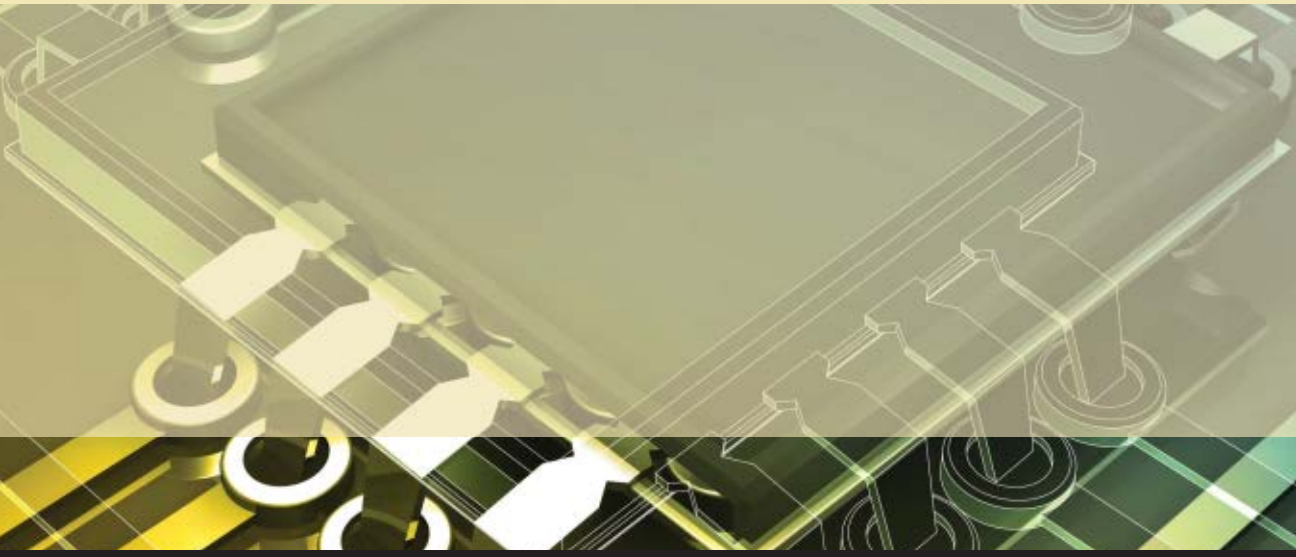
Mark: Intel put significant effort into making sure that our server and platforms deliver break-through performance, reliability and efficiency while running Windows Server 2008. Microsoft and outside analysts predict that this will be one of the fastest operating system ramps in Microsoft's history. I'm confident that servers based on Intel's Xeon and Itanium processors will provide the hardware foundation for this technology transition point.

Q: What is Intel's current value proposition as it relates to server and datacenter consolidation? Anything you'd like to add on virtualization technology?

Mark: All of the work that we've done together on Power Management, Virtualization, Security and RAS (Reliability, Availability and Serviceability) translate into high performance, highly efficient servers for the datacenter. And of course, all of Intel's Xeon™ processors and server platforms have the features necessary to run Microsoft's Hyper-V – Intel64, VT and XD bit. We've worked closely with Microsoft to make sure that each of these features provides optimum performance on Windows Server 2008.

Q: Intel has long had a strategic relationship with Microsoft. But why work with Microsoft in the first place? What is the value of your alliance?

Mark: Intel works closely with Microsoft so that we can deliver what our joint customers demand. Our work with Microsoft on Windows Server 2008 started more than five years ago and these activities increased in scope and complexity through the long development cycle. This broad effort included influencing and aligning roadmaps between core operating system areas and architectures, identifying system requirements and features, prototyping and co-developing support for key features and validation and optimization of these features for Intel platforms. All of this work translates into better performance and lower TCO on Intel server platforms running Windows server 2008.



Documents, Desktop, and other folders, the number of files in your roaming profile—and particularly the number of large files—will be significantly reduced.

You can use Group Policy to exclude additional folders from roaming. The Group Policy setting you require is *Exclude directories in roaming profiles*, located under User Configuration, Administrative Templates, System, User Profiles. Because this setting is user-based, you could have different folders roaming based on a user's role. You can specify folder names relative to the user profile, such as AppData\Roaming\Microsoft \Windows\Cookies. Figure 2 shows an example that excludes the Cookies folder on both Vista and XP.

A well-designed UDS framework will use roaming profiles as the mechanism for managing a user's registry file—the ntuser .dat file in the root of the profiles. This file contains a number of critical settings and customizations that affect a user's Windows experience, and it's absolutely worth managing to achieve your mobility, availability, and resiliency requirements. The only practical way to meet the requirements for the registry file is a roaming profile—even if the *only* item in the roaming profile is ntuser.dat.

I also recommend that you allow the AppData folder—specifically, the \AppData\ Roaming folder in Vista and the \Application Data folder in XP—to roam. It's possible to redirect AppData, but in my experience, many poorly coded applications won't function correctly if AppData is redirected. Some applications also have trouble if, on a laptop, AppData is cached using offline files and network connectivity causes the computer to transition between online and offline modes. I think your goal should be to redirect AppData eventually but not until you have time to thoroughly test all applications. So, the practical recommendation is to use roaming profiles to manage AppData until you can confidently redirect it.

Vista appends a .V2 extension to the folder that hosts the user's roaming profile. If you configure a user's profile path as \\ *namespace*\%username%\profile, the user's XP profile will be in the Profile folder, and the user's Vista profile will be in the Profile. V2 folder—automatically. Due to significant differences in registry and AppData structure, there's no way to unify those two settings stores for Vista and XP users. They will be separate. That's another good reason for ensuring that roaming profiles manage *only* those two stores—any other stores in the roaming profile will be duplicated and separate for a user's XP and Vista profile.

When a user's roaming profile contains only the registry file and the AppData folder, the profile should be very small. On my heavily overloaded laptop, my roaming profile is only 40MB. Profile synchronization has less data to scan and copies only changed files, so the process is fast, efficient, and reliable.

Manage the Location of Unwanted Data

Most IT organizations aren't expected to manage users' personal music collections. I'm using music as an example of what I call "unwanted data"—a class of data that isn't subject to your business's security, mobility, availability, and resiliency requirements. You might identify other types of data as unwanted: users' personal files, pictures, or email archives from non-business email accounts. This is one class of data for which Microsoft doesn't a provide straightforward management solution. Vista makes it easier to manage unwanted data classes if they parallel specific media types: The Vista Pictures, Music, and Videos folders are already at the root of the user profile. For other classes of unwanted data (e.g., personal files), you'll still need this workaround.

To ensure that unwanted data isn't stored on network servers, you must first move the data so that it's not within the scope of a redirected folder. For example, XP's My Music folder is a subfolder of My Documents. Because My Documents will be redirected, you must relocate the My Music folder. Create a first-level folder underneath the root of the user profile—%userprofile%\Music, for example—and move the data to that folder.

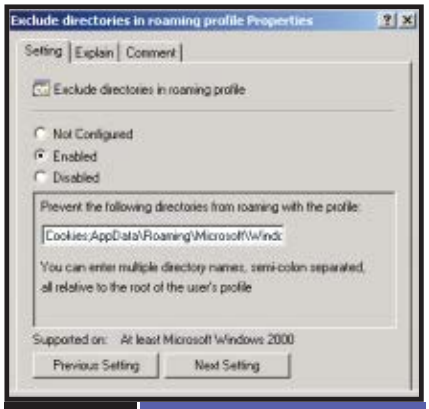


Figure 2: Excluding the Cookies folder

Next, determine how to redirect applications and the user to the new location. In the case of a media folder such as Music, you can use registry-based redirection to redirect applications to the new location. You can even use the RegistryRedirection. adm Group Policy administrative template to implement the registry-based redirection. Just point the My Music folder to your custom folder (%userprofile%\Music). You must also ensure that users can find the custom folder for the unwanted data. Shortcuts placed at the data folder's old location do the trick.

Repeat this process for each class of unwanted data: Create a folder within the user profile, redirect applications as necessary, and provide users a way to navigate to the folder. Of course, you can combine various types of unwanted data within one user-profile folder. I recommend creating a Personal Files folder (%userprofile%\Personal Files) to host unwanted data that isn't directly associated with pictures, music, or videos.

After you move all unwanted data out of redirected folders, the final step to managing unwanted data is to exclude the unwanted data folders from roaming profiles. Use the aforementioned Group Policy setting to exclude each unwanted data folder.

Manage Data That Must Be Accessed Locally

Sometimes, it's possible to store data on the network, but you find that performance over the network while accessing that data is unacceptable. Consider a company that creates videos for Web streaming. Editing video files over the network generally isn't feasible. Most video-editing software performs adequately only when video files are accessed from the local disk subsystem. Our sample company needs to manage these video files according to the same requirements I mentioned earlier, including resiliency, availability, and perhaps even mobility.

These files need to reside on the network, but users need to access them from a local disk. I refer to such data as "locally accessed data"—another class of data for which Microsoft provides no perfect management solution. There are three approaches you can use to address locally accessed data. Each has its pros and cons.

First, you can move such data out of

redirected folders and into folders in the user profile. Users access files in the user profile locally. They'll be synchronized to the network at logoff as part of the roaming-profile synchronization. However, if locally accessed data files are large, synchronization can be extremely time-consuming.

Second, you can keep the data in redirected folders, use offline files to take the data offline, and leverage a new Group Policy setting available to Vista clients: Network Directories To Sync At Logon/Logoff Time Only. The policy is located in User Configuration, Administrative Templates, System, User Profiles—a non-intuitive location for an offline files setting. You use the network paths to the locally accessed data to configure the policy—for example, *namespace*\%username%\Documents\StreamingVideoProjects. Vista clients will access files in that location from the local cache, providing all the performance benefits of local access. Unfortunately, as with roaming profiles, the data will synchronize at logoff and synchronization time might be unacceptable.

The third approach is to move the data out of redirected folders and into the user profile—but to exclude the folders from roaming. Then, implement another mechanism that synchronizes or backs up the data in the folders to appropriate network locations on a configurable schedule. Our video-streaming company, for example, could create a folder for each user (%userprofile%\StreamingVideoProjects) and exclude it from users' roaming profiles, then use a scheduled task to back the folder up to the network every few days. The *Windows Administration Resource Kit* has a script that does just that—and the script works on all current versions of Windows. You can deploy the script as a logon or startup script or as a scheduled task, and it uses Robocopy to synchronize the local store with a network folder at a given frequency—once a week, for example. In Part 1, I recommended a Backups folder in the physical and DFS namespace; that folder is specifically designed to store a network backup of files in this "locally accessed" class of data.

UDS to Go

After you've moved UDS to network servers, keep in mind that laptop users will need access to data and settings when they're disconnected from the network. Roaming profiles will ensure that a user's registry file and AppData folder are available locally. For all the data in the redirected folders, you can use offline files to cache the network data stores for offline access. In fact, Vista and XP clients will automatically cache redirected folders. There are many caveats and nuances that affect the design and implementation of offline files. I'll go over the most important.

- Vista and XP support the encryption of the offline files cache, adding a layer of security to user data on the road. See "Using EFS with Offline Files" (InstantDoc ID 47624) for more information.
- Consider disabling the automatic caching of redirected folders on desktop systems. You probably don't want the conference room computer to cache the redirected folders of every user who logs on to it.
- By default, XP systems will scan all files in offline folders to determine what has changed and what needs to be synchronized at logoff. If you have thousands of files cached, this scanning can take forever. XP can use a different algorithm to track files as they're changed, making logoff synchronization significantly more efficient. Use Group Policy to disable the Synchronize All Offline Files Before Logging Off policy setting, which you'll find in Administrative Templates, Network, Offline Files of both User Configuration and Computer Configuration. This option is equivalent to the Synchronize All Files Before Logging Off option on the Offline Files tab of the Control Panel Folder Options applet. This approach works well when you're primarily or exclusively using offline files to make user data (as opposed to shared data) available offline.
- Consider removing the list of blocked file types when you're using Offline Files to cache user data. Check out the Microsoft article "Error message: 'Files of this type cannot be made available offline'" for details. (See the Web-exclusive Learning Path at www.windowsitpro.com, InstantDoc ID 98004.)
- Folders for which you've used registry-based redirection to redirect won't be made automatically available offline. You can "push" these files offline into users' caches by using the Administratively Assigned Offline Files policy setting, which you'll find under User Configuration, Administrative Templates, Network, Offline Files.
- Provide XP users a way to force themselves offline when connected over a mediocre connection. If an XP user connects to the corporate network over a VPN, Offline Files might decide that the connection is "good enough" and attempt to work from the network copies of cached files. It might even try to synchronize over the VPN. Microsoft Product Support Services (PSS) can provide you with Csccmd (csccmd.exe), a command-line tool for managing Offline Files. The tool supports a /DISCONNECT switch, which can force a namespace offline so that users work from the locally cached copy. Create a batch file on the user's desktop that he or she can double-click to stay offline while connected over the VPN. Here's an example of the batch file:

```
csccmd /DISCONNECT:\\contoso.com\
  users\%username%\documents
csccmd /DISCONNECT:"\\contoso.com\
  users\%username%\desktop"
```

- The functionality and performance of Vista's Offline Files is so vastly improved over that of XP that you should have very few problems supporting the offline use of UDS for Vista users.

Tip of the Iceberg

A UDS management framework can be quite complicated, not only because of the complexity and idiosyncrasies of the involved technologies but also because you have to creatively address two data scenarios—unwanted data and locally accessed data—that Windows technologies don't adequately support.

Microsoft's documentation thoroughly details the steps necessary to implement the individual technologies with which to manage UDS. Unfortunately, very little documentation exists to help you support the varied classes of data in your enterprise. This article should help you overcome and avoid common implementation pitfalls, and if you still need help, I strongly encourage you to dive into Chapter 3 of the *Windows Administration Resource Kit* for comprehensive guidance toward a UDS management framework.

InstantDoc ID 98004

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YET ANOTHER 8 ABSOLUTELY COOL, TOTALLY FREE Utilities

ENJOY OUR LATEST COLLECTION OF EXCELLENT FREE/ OPEN-SOURCE UTILITIES FOR YOUR USB TOOLKIT

BY DOUGLAS TOOMBS

I'm addicted to digging up quality tools and utilities that are free—it's a treasure-hunter's challenge! Sure, anyone can find costly utilities that do a good job of making a certain task easier. The trick is to find the free ones that perform just as well as their commercial counterparts. Since last September's publication of "8 More Absolutely Cool, Totally Free Utilities" (InstantDoc ID 96628), I've been having a lot of fun unearthing more and more free utilities for my toolbox, and I'm dying to share them with you. So, check these out and start downloading! (Check out the Learning Path, page 54, for download details.)

TestDisk

Recently, an external USB drive that I was using for file backups and storage of non-critical files experienced a hard crash—you know, the "thunk-thunk-thunk" heads-against-platters noise that makes any systems administrator's skin crawl. I knew my chances for a full recovery were rather slim, so I started looking around for data-recovery utilities.

I came across TestDisk, an open-source application licensed under the GNU Public License. Available from Christophe Grenier, TestDisk—completely free for any person or organization to use—can help you recover damaged partitions, make non-bootable disks bootable again, and repair damaged boot sectors. The application runs under DOS, Windows, Linux, the BSD variants, and MacOS, to name just a few OSs. File-system support includes every common type (e.g., FAT, NTFS, EXT2/3), as well as a bunch you've probably never heard of. I have no doubt that TestDisk can repair or recover

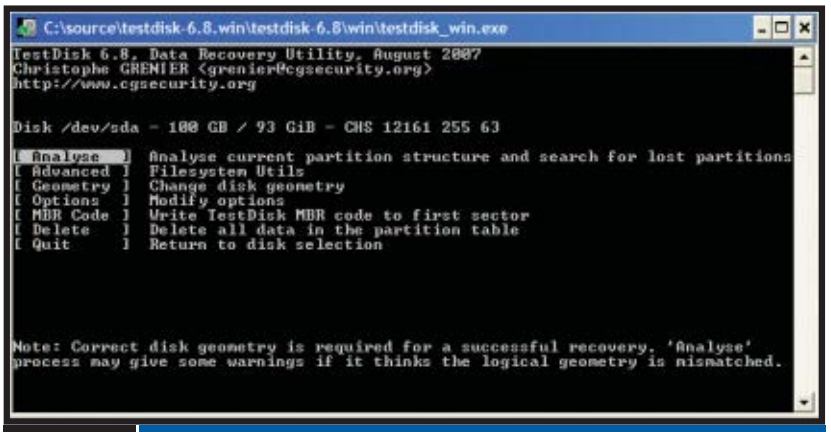

Figure 1: TestDisk's main screen

data from a broad range of malfunctioning systems. Figure 1 shows its main interface.

Unfortunately, however, TestDisk didn't solve my problem. The "thunk-thunk-thunk" sound was a dead giveaway that I was facing a physical/mechanical disk problem. No software can fix physical problems, and the TestDisk documentation makes that clear. For mechanical problems, you'd need to enlist the services of a professional data-recovery service that can physically open the drive and try to read the platters back.

I had hoped I'd get lucky, to no avail. Still, the experience gained me another valuable tool for my toolbox—one that I'll keep around should disaster strike.

GParted LiveCD

Have you ever painted yourself into a corner by partitioning a physical disk drive into multiple logical partitions, only to realize months later that you didn't anticipate your space needs correctly? In the past, I've paid for commercial partition-management utilities such as Norton's PartitionMagic to get myself out of such situations. Invariably, however, by the time I need to use a partition-management utility a second time, I'm using a newer file system or a new type of disk that my partition manager doesn't support. Recently, for example, I had to move an ext3 partition around on one of my systems' hard disks, but my outdated partition-management utility didn't support ext3.

Having paid multiple times for similar feature sets, I was recently happy to find GParted LiveCD when I needed to resize some partitions on my laptop. GParted LiveCD is a bootable runtime version of the Gnome Partition Editor (GParted). By booting up a small, stripped-down instance of Linux, GParted LiveCD is the only tool you'll ever need for managing partitions on your systems—including resizing partitions, moving partitions, and even mirroring partitions.

GParted LiveCD is available as a downloadable ISO image. After the download, you can burn it straight to a bootable CD-ROM (see CDBurnerXP 4 later) and put it in the machine whose partitions need editing. Of course, it goes without saying that you should *always* perform a full system backup before resizing a partition on a production system.

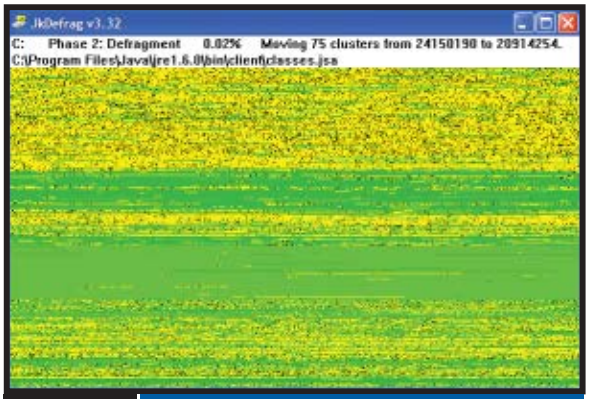

Figure 2: JkDefrag at work

JkDefrag

How about my absolute favorite disk-based utility? JkDefrag is a disk-defragmentation and -optimization utility for all modern versions of Windows. You might ask, "Why should I care about a disk defragmenter when Windows has one built in?" Because the Windows defragmenter is a bit basic, there's still a great marketplace for commercial third-party disk-defragmentation utilities, and for that reason, I appreciate a utility such as JkDefrag.

Developed by Jeroen Kessels, JkDefrag runs automatically, is very easy to use, and supports several customization features through command-line switches. Speaking of command-line switches, there are also GUI and screen-saver versions of JkDefrag, in addition to the command-line version.

JkDefrag can handle typical internal hard disks, external USB drives, floppy disks, memory sticks—essentially anything that Windows interprets as a drive. It uses the standard defragmentation API provided by Microsoft, so it's as safe to use as Windows' built-in defragmenting utility. However, JkDefrag doesn't simply aim to defragment your hard disk; the tool's available command-line strategies will also help you optimize that disk's performance. Figure 2 shows JkDefrag at work.

For example, when you launch JkDefrag for the first time (without any command-line parameters), it will begin to defragment and optimize all the mounted writable drives on your system that it can find. The default optimization is a *fast optimization*, which should increase system performance a bit. For example, the beginning or center of a hard disk performs much better than the very edge of a disk; therefore, as a default strategy, JkDefrag will attempt to move all files to the center of the disk. However, it doesn't do so arbitrarily! JkDefrag tries to place files closest to the center of the disk based on three levels of importance: directories (the most often accessed files on a system) in the front, regular files in the middle, and *SpaceHogs* at the end. JkDefrag uses the SpaceHogs nomenclature to describe files that tend to be large but less important. Examples of SpaceHogs include MP3, WMV, and AVI files, and any i386 directories you might have lying around. When I run JkDefrag on my systems, I also flag AAC and *.m4? files as SpaceHogs by using the -u command-line option. (I have a lot of purchased content from iTunes.)

After JkDefrag finishes its first default run, you should have a neatly organized hard disk, with your most important data toward the center of the disk and the least important in

_INFRASTRUCTURE LOG

_DAY 79: Our IT environment is rigid and inflexible. We can't adapt to our changing business needs. Oh no... I was afraid of this. We're so rigid, we're stuck in time.

_*Infrastructurus prehistoricus*. I've read about this.

_DAY 80: I'm taking back control with IBM SOA solutions. Now we have the hardware, software and services we need to respond to change. IT strategy, planning and implementation are in tune with our specific business needs. We're deploying and updating business processes faster and more efficiently. We're evolving!

_Good-bye, rigid past. Hello, flexible future.

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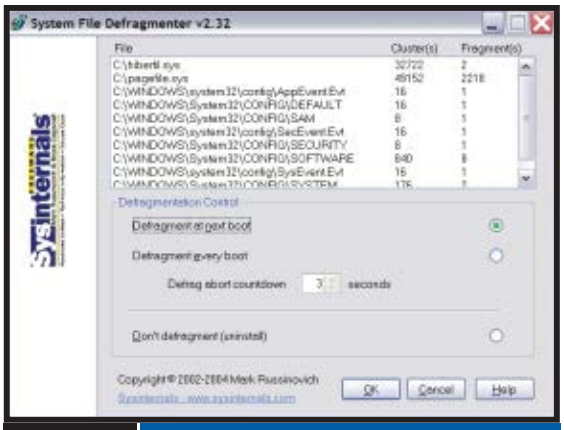

Figure 3: PageDefrag's main screen

the back. Once you've finished your first run, you can schedule recurring defrags to take place during off hours through the Control Panel Schedule Tasks applet.

After running JkDefrag for several weeks, I must say that my system seems a bit faster. Give JkDefrag a spin on your computer. You'll be glad you did! See the Learning Path for information about where to get JkDefrag's latest standalone executables (no installation required!).

PageDefrag

While I'm on the topic of defragmentation and performance, there's one file in your computer that's probably taking up a lot of space, is critical in terms of system performance, and can't be defragmented by standard defragmentation utilities. That would be your pagefile.

The computer I'm using to write this article, for example, has a pagefile that consumes about 1.5GB worth of space. As Windows swaps certain programs in and out of main memory, the page file is the storage container that receives the program data. I can't even begin to comprehend the complexities of keeping a file such as this optimized for maximum performance, but fortunately I don't have to. Mark Russinovich at SysInternals has done it for me.

As you might know, SysInternals was the home of some of the best free Windows utilities anywhere on the Internet. Recently, Mark joined Microsoft, and therefore Microsoft has inherited all these great tools. PageDefrag is just one of the many SysInternals utilities you can find at the company's Web site. Figure 3 shows PageDefrag's main screen.

When I first ran PageDefrag, the application presented a list of files that it would defragment (i.e., the pagefile, the hibernation file, event logs, and the registry hives), and I was surprised to see that my 1.5GB pagefile had more than 2,000 fragments across my hard disk! I instructed PageDefrag to defragment my pagefile during the next Windows bootup (the only time the pagefile isn't in use, and therefore the only time it can be defragmented) and let it start its work. You can have PageDefrag run once on the next reboot or every time your system boots.

DriveImageXML

Have you ever had to restore a full desktop system from a failed hard disk, with only a recent Windows backup available to you? If so, you understand the hassle of such a process. First, you have to get a new hard disk, place it in the PC that needs to be rebuilt, and install a clean copy of Windows (assuming you remember where you put that system's installation media). That process can take over an hour for most systems. Then, finally, you can restore your full backup to the system and get back up and running. Wouldn't life be easier if you had an image of your system that you could just zap to a new hard disk, and get back up in less time?

Disk-imaging tools such as Norton Ghost offer a solution to this problem: Instead of doing a system-level backup, such tools create an image of the disk itself. Then, if you experience a failure, you simply need to write that image to a new disk, and you're ready to go—without the intermediate step of reinstalling a base copy of Windows.

Runtime Software provides a free utility called DriveImageXML for this purpose. It stores the images it creates as XML-formatted data so that your images aren't locked up in a proprietary vendor's binary format. Through the DriveImageXML interface (which Figure 4 shows), you can also browse through disk-image files to view or extract individual files,

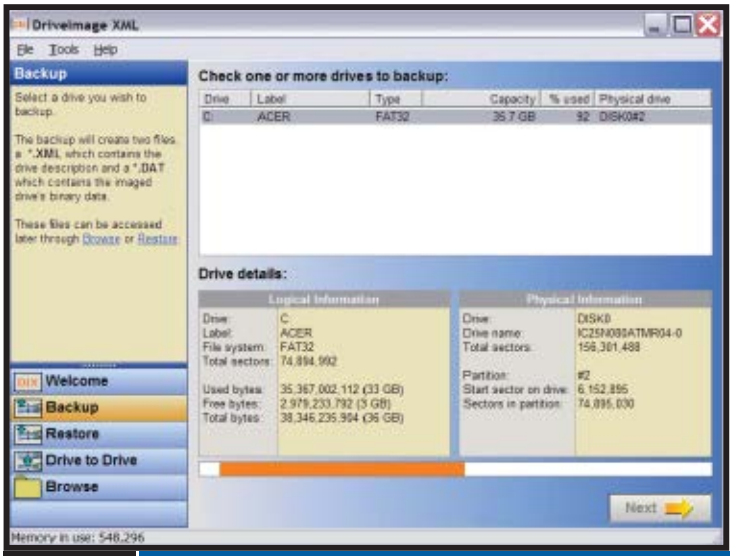

Figure 4: The DriveImageXML interface

Learning Path

Find your free tools:

CamStudio (camstudio.org)

CDBurnerXP (cdburnerxp.se)

Comodo Firewall Pro (www.personalfirewall.comodo.com)

DriveImage XML (www.runtime.org/dixml.htm)

GParted LiveCD (gparted-livecd.tuxfamily.org)

JkDefrag (www.kessels.com/JkDefrag)

PageDefrag (www.microsoft.com/technet/sysinternals/Utilities/PageDefrag.mspx)

TestDisk (www.cgsecurity.org/wiki/TestDisk)

***WINDOWS IT PRO* RESOURCES:**

"8 Absolutely Cool, Totally Free Utilities," InstantDoc ID 50122

"8 More Absolutely Cool, Totally Free Utilities," InstantDoc ID 96628

"A Bootable Network Security Toolkit," InstantDoc ID 44409

"6 Network Protocol Analyzers," InstantDoc ID 42922

_INFRASTRUCTURE LOG

_DAY 69: All we need is one specific piece of info. Gil almost had it, but his hand cramped. How are we supposed to find trusted business information when these massive volumes of conflicting info keep pouring in?

_Gil just grabbed a stuffed panda.

_DAY 71: The answer: IBM solutions for leveraging information. Now we can cleanse info and standardize source data fields for consistency and accuracy. I can create a single, accurate and unified record of info across our source systems. Everyone can make better decisions.

_Just in time—I think we ran out of quarters.

IBM

Information Management

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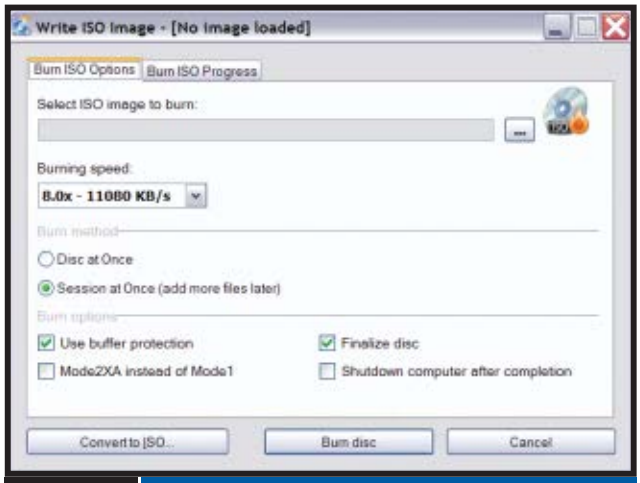

Figure 5: CDBurnerXP's UI

if necessary. DriveImageXML works with all FAT and NTFS partitions and runs on Vista, Windows 2003, and XP.

CDBurnerXP

Several years ago, I realized I was getting buried in original source-media CD-ROMs and DVDs for all the different versions of OSs, applications, and peripherals I regularly work with. Keeping track of all these discs was becoming tedious, so I started storing ISO image files of every original media CD I got, as soon as I received it. By archiving these CDs in a central location on my network, I knew they would always be available. If a CD was ever lost or destroyed, I could still turn to the ISO file and burn a new disc in a few minutes, saving me the hassle of contacting the vendor for a replacement disc.

CDBurnerXP is the first tool I used for this purpose, and it's still the tool I use today. It's a full-featured CD-burning program that includes the ability to create ISO files from CDs and DVDs, and it can burn CDs, DVDs, HD DVDs, and Blu-ray DVDs. In addition to using CDBurnerXP as an ISO-reading and -burning utility, I use it as a capable audio disc burner. Figure 5 shows the tool's UI. CDBurnerXP runs on Vista, Windows 2003, XP, and Windows 2000.

Comodo Firewall Pro

When I ponder the notion of a "free firewall," I get a bit skeptical. After all, considering the speed at which Internet-based threats grow, how good could a "free" firewall application be? I'm always happy when my skepticism is proven wrong, and Comodo Firewall Pro does just that.

When I first installed Comodo Firewall Pro, I initially thought I'd just installed a copy of Zone Alarm (a popular, commercial personal firewall application). After a reboot to insert the proper network-level modifications into my system, Comodo Firewall Pro instantly recognized that it was communicating on a network it hadn't seen before (i.e., my home network) and asked me to provide a name for it. Then, a few network utilities in my Startup folder that Comodo Firewall Pro didn't know about attempted to connect to the Internet. Comodo Firewall Pro immediately saw this outbound communication attempt and displayed a dialog box identifying the application that was trying to communicate (and to where) and asking whether I wanted to allow or deny the outward communication. After I allowed these trusted applications the rights to communicate when necessary, Comodo Firewall Pro never bothered me about them again. Within five minutes of using Comodo Firewall Pro, I was extremely impressed by its thoroughness—especially considering the price. Figure 6 shows Comodo Firewall Pro's UI.

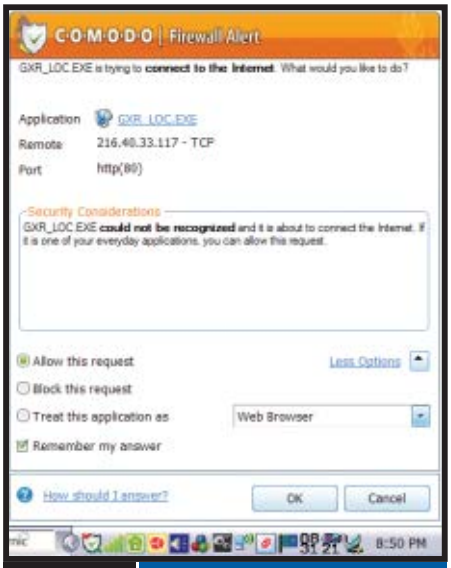

Figure 6: Comodo Firewall Pro's UI

How and why, you might ask, does Comodo offer such a worthwhile product for free? In a forum posting on the company Web site, the CEO expresses his intention of offering Comodo Firewall Pro for free as a means to build corporate brand identity and raise customer awareness. It's a smart strategy, and I have a feeling Comodo Firewall Pro will be around for a long time. Comodo Firewall Pro runs on Vista and XP, both 32-bit and 64-bit versions.

CamStudio

In "8 More Absolutely Cool, Totally Free Utilities," you'll find a sidebar for a utility called Wink—a good tool for building *screencast* recordings. Screencasts are digital recordings of computer-display output, often overlaid with audio or video. These types of tools are becoming increasingly popular as training and demonstration utilities. After you produce a screencast, an audience of thousands can watch it immediately. Since mentioning Wink in that article, I've discovered CamStudio, another strong contender in this space.

CamStudio is a solid utility for recording screencasts, interleaving audio and video simultaneously, then producing final content in Web-friendly Flash files for easy, cross-platform consumption. Having paid for commercial versions of such applications in the past, I'm quite impressed with CamStudio and look forward to it being a strong contender in this space.

Can't Beat the Price

Commercial versions of all the utilities in this article would probably cost more than $500. Save that money and download these free and open-source counterparts, which perform just as well. Stay tuned for the fourth installment of this series, in which I'll share more free software gems to make your job easier.

InstantDoc ID 97968

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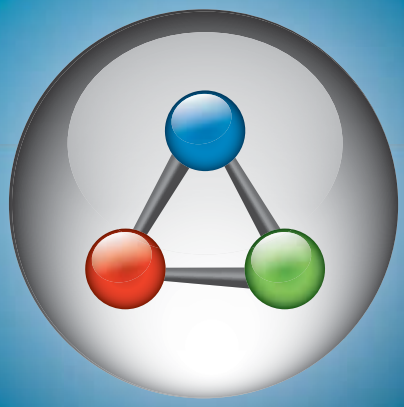
busi·ness pro·cess au·to·ma·tion

[biz-nis | pros-es | aw-tuh-mey-shuhn]

The replacement of a manual business process with an automated one, usually through the use of **advanced technologies**.



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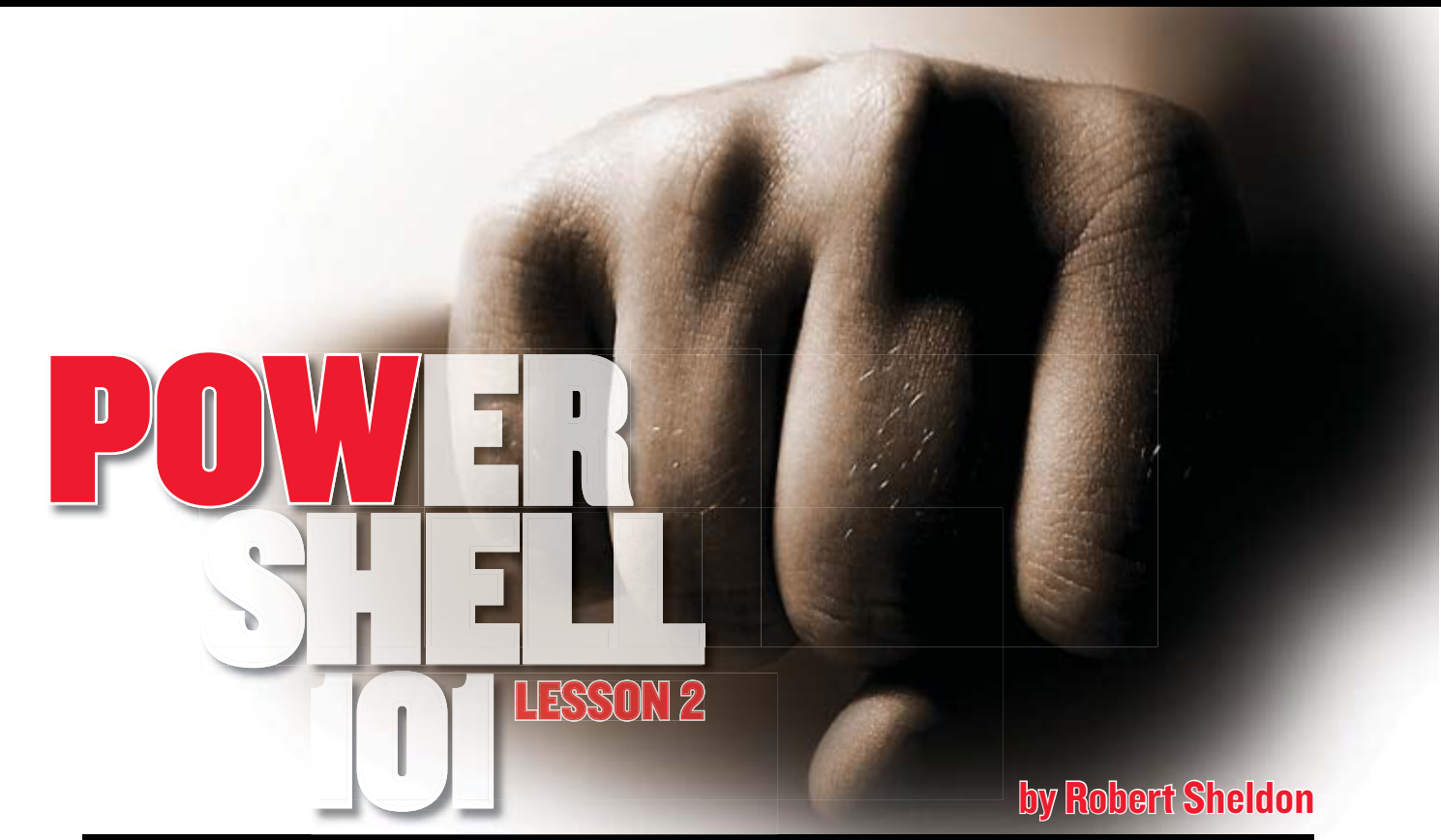

POWERSHELL 101 LESSON 2

by Robert Sheldon

HOW TO CREATE PIPELINES AND MANAGE OUTPUT

In "PowerShell 101, Lesson 1" (February 2008, InstantDoc ID 97742), I introduced you to the concept of cmdlets and how to run basic PowerShell commands. I also showed you how to use aliases and how to use PowerShell's Get- cmdlets to get help when creating commands. For example, you can use the Get-ChildItem cmdlet to retrieve a list of items in a folder or the Get-Content cmdlet to retrieve the content of a text file. With cmdlets and their parameters, you can run a wide variety commands that display system information or carry out tasks.

However, a cmdlet alone might not always provide the full functionality you require. For this reason, PowerShell lets you create pipelines that link cmdlets together to carry out complex operations and refine the system information you retrieve. In this lesson, you'll learn how to link cmdlets into a pipeline to create PowerShell statements. You'll also learn how to format and sort statement output.

Implementing a Pipeline

A PowerShell pipeline is a series of cmdlets that pass objects from one cmdlet to the next. Each cmdlet generates an object and passes it down the pipeline, where it is received by the next cmdlet. The receiving cmdlet uses that object as input and generates its own output as an object. You connect cmdlets into a pipeline by using the pipe (|) operator.

Pipelining in PowerShell is different from pipelining in other command shell environments, such as the Windows command shell. In traditional environments, a command's results are returned as a single result set, which means that the entire result set must be generated before any information is passed down the pipeline. The first result is returned at the same time as the last result. In PowerShell, however, the results are streamed through the pipeline. As soon as a command returns a result, it passes it down the pipeline, and that result is immediately available to the next command in the pipeline.

Let's look at an example that will help you understand how a pipeline works. If you run the cmdlet

```
Get-Service
```

you'll receive a list of the services installed your system, similar to the list in Figure 1, page 60. Notice that the cmdlet returns the status, name, and display name of each service. Suppose you want to retrieve a list of running services only. You can pipe the output from the Get-Service cmdlet to the Where-Object cmdlet, which filters the output based on the specified criteria, as shown in the statement

```
Get-Service |
Where-Object {$_.status -eq 'running'}
```

As you can see, you use a pipe operator to connect the two cmdlets. The Get-Service cmdlet generates an object that contains the service-related information. The object is passed down the pipeline to the Where-Object cmdlet. The Where-Object cmdlet receives the object and uses the information as input. The Where-Object cmdlet filters the information based on the Status property value. Notice that the

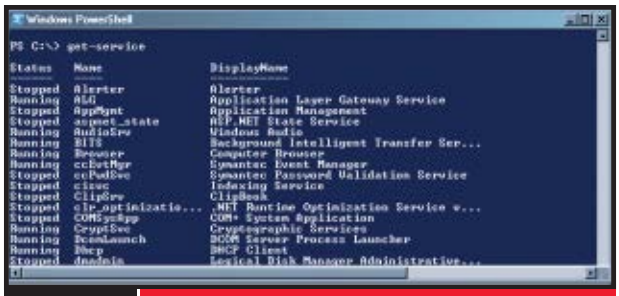

Figure 1: Retrieving a list of services

Figure 2: Retrieving a list of running services

Where-Object cmdlet includes an expression enclosed in braces ({}). If the expression evaluates to true, the Where-Object passes that object down the pipeline and filters out any other object.

In this case, the Where-Object expression states that the Status property value must be equal to (specified by the -eq operator) the string *running*. Status is one of the properties available to the object generated by the Get-Service cmdlet. When an object is passed down the pipeline, you can access its properties, as I've done in the Where-Object expression. To access a property in the pipeline in this manner, you use the $_ built-in variable. This variable holds the current object within the pipeline each time the Where-Object cmdlet loops through the pipeline results. You can then reference the object's properties, as in $_.Status. The output now looks similar to that in Figure 2. (You'll learn more about the Where-Object cmdlet, object properties, and operators in later lessons.)

Note that you'd typically enter the statement just given on one line in the PowerShell console window. However, column widths in the magazine force us to print this statement on more than one line. Also note in Figure 2 the >> character sequence at the beginning of some of the lines in the command. This character sequence constitutes a multiline prompt. For information about when you'd want to enter a statement on multiple lines in the PowerShell console window and how to properly do so, see the sidebar "How to Handle Long PowerShell Statements," page 62.

Now suppose you want to list only the display name of each running service. You can pipe the output of the Where-Object cmdlet to the Select-Object cmdlet:

```
Get-Service |
where {$_.status -eq 'running'} |
select displayname
```

In this statement, the Select-Object cmdlet receives the object from the Where-Object cmdlet. In this case, the statement uses the *where* alias to reference the Where-Object cmdlet and the *select* alias to reference the Select-Object cmdlet. In the *select* cmdlet, you specify the name of the property (or properties) that you want to display. For this example, I've specified the displayname property. The statement will now output results similar to those in Figure 3.

The key to using pipelines is to remember that you're always working with objects. Each cmdlet generates an object that the next cmdlet in the pipeline receives. Even the final cmdlet generates an object that outputs the statement results. As you progress through the lessons, you'll learn how to use those objects and their properties to refine your PowerShell statements.

Formatting Statement Output

By default, PowerShell formats a statement's output based on the type of data in that output. For example, the following statement returns data about the PowerShell process:

```
Get-Process powershell
```

In this case, PowerShell displays the output from this command in a table, as shown in Figure 4. If you don't want the output in this default format, you can pipe the statement output to a format cmdlet. PowerShell supports four cmdlets that format output:

- The Format-Table cmdlet displays data in a table (Figure 4). This is the default format for most cmdlets, so you often don't need to specify it.
- The Format-List cmdlet displays data in a list.
- The Format-Wide cmdlet displays data in a wide table that includes only one property value for each item.
- The Format-Custom cmdlet displays data in a custom format, based on stored configuration information in a .ps1xml format file. You can use the Update-FormatData cmdlet to update a format file. (A discussion of the Update-FormatData cmdlet and format files is beyond the scope of these lessons. See PowerShell's "Update-FormatData" Help file for more information.)

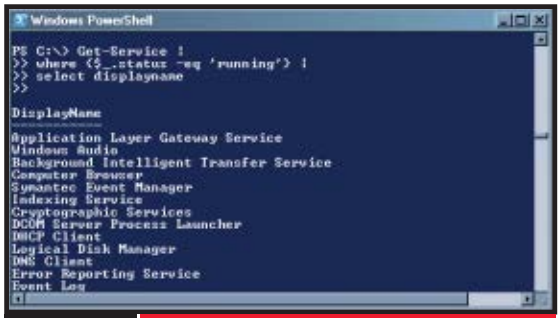

Figure 3: Retrieving the display names of the running services

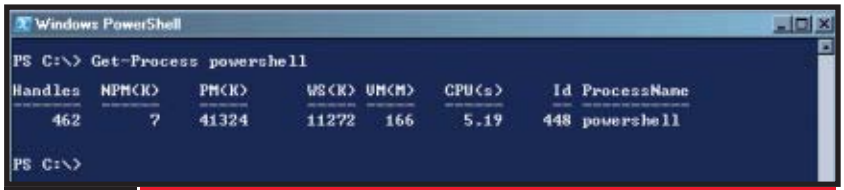

Figure 4: Displaying output in a table format

To change the format of the output from the preceding statement, you can pipe it to the Format-List cmdlet:

```
Get-Process powershell |
Format-List
```

Now your results will be similar to those in Figure 5. Notice that the list format displays only a subset of the information displayed in the table format. The information displayed differs between formats. PowerShell determines how to format the results based on object type. In other words, the format type, layout, and properties returned are specific to the type of object. For example, the results returned by the Get-ChildItem cmdlet when retrieving file system information will be different from the results returned when retrieving information about the registry because they're two different types of objects, even though the same cmdlet is used. PowerShell uses a set of complex XML format (.ps1xml) files to determine how to display the results.

Controlling Statement Output

When you execute a statement, PowerShell applies the default format to the output and sends that output to the console window, unless you override this behavior by using one the four format cmdlets I just described. However, you can also control where to send that output. PowerShell provides six cmdlets for controlling output:

- The Out-Host cmdlet sends output to the PowerShell console. This is the default output cmdlet, so you don't need to specify it.
- The Out-Default cmdlet sends output to the default formatting cmdlet. In addition, Out-Default delegates the outputting process to the Out-Host cmdlet. You don't need to specify the Out-Default cmdlet.
- The Out-File cmdlet sends output to a specified file.
- The Out-Null cmdlet deletes output and doesn't send it to the PowerShell console.
- The Out-Printer cmdlet sends output to a printer.
- The Out-String cmdlet converts the pipeline object to an array of strings.

You can find additional information about each cmdlet in the PowerShell Help files.

To control a statement's output, add the output cmdlet at the end of your pipeline. For example, the following statement formats the PowerShell process information into a list, then sends that list to the C:\SysInfo\ps.txt file:

```
Get-Process powershell |
Format-List |
Out-File C:\SysInfo\ps.txt
```

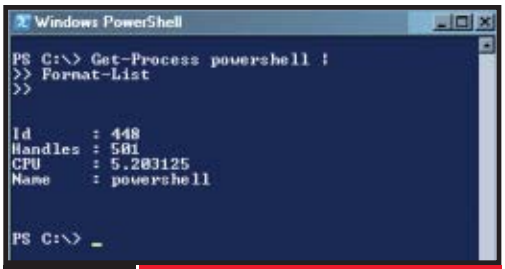

Figure 5: Displaying output in a list format

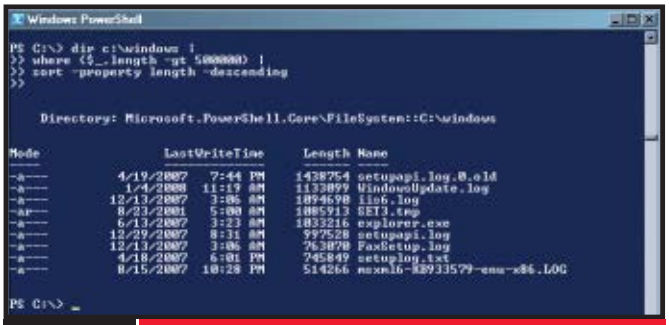

Figure 6: Sorting data based on property values

When you send output to a file, PowerShell saves the content to the file but doesn't display it in the console. You can use the Out-File cmdlet to send output to any type of file that makes sense. For example, you wouldn't want to send text to a .bmp file. Although this wouldn't throw an error, you wouldn't be able to view anything when you opened the file.

The Out-File cmdlet lets you choose whether to append the output to the file or replace the existing content with the output. By default, it replaces any existing content. To append the output, you need to add the -append switch to the Out-File cmdlet:

```
Get-Process powershell |
Format-List |
Out-File C:\SysInfo\ps.txt `
  -append
```

Learning Path

For more information about pipelining:

"Piping and the Pipeline in Windows PowerShell"
www.microsoft.com/technet/scriptcenter/topics/winpsh/manual/pipe.mspx

For more information about how to format output:

"What Can I Do With Windows PowerShell? Using the Format-List Cmdlet"
www.microsoft.com/technet/scriptcenter/topics/msh/cmdlets/format-list.mspx

"What Can I Do With Windows PowerShell? Using the Format-Wide Cmdlet"
www.microsoft.com/technet/scriptcenter/topics/msh/cmdlets/format-wide.mspx

For more information about how to control where output is sent:

"What Can I Do With Windows PowerShell? Using the Out-File Cmdlet"
www.microsoft.com/technet/scriptcenter/topics/msh/cmdlets/out-file.mspx

"What Can I Do With Windows PowerShell? Using the Out-Printer Cmdlet"
www.microsoft.com/technet/scriptcenter/topics/msh/cmdlets/out-printer.mspx

"Making PowerShell's Out-Printer Cmdlet Easier to Use," InstantDoc ID 97632

For more information about how to sort output:

"What Can I Do With Windows PowerShell? Using the Sort-Object Cmdlet"
www.microsoft.com/technet/scriptcenter/topics/msh/cmdlets/sort-object.mspx

If you're beyond the basics, check out:

"PowerShell One-Liners for Managing the File System," InstantDoc ID 96320

"PowerShell Script Lets You Check Patches' Status," InstantDoc ID 97609

"Understanding PowerShell Security," InstantDoc ID 94624

HOW TO HANDLE LONG POWERSHELL STATEMENTS

As a PowerShell statement grows larger, it's not always practical to enter it on a single line in the PowerShell console window. You can enter a long statement on several lines, but you must take into account how PowerShell treats new lines. When PowerShell determines that a line is incomplete, it continues to the next line when processing the statement. For example, when the first line in a statement ends with the pipe operator, as in

```
Get-Service |
where {$_.status -eq 'running'} |
select displayname
```

PowerShell knows that the statement continues to the next line. This statement returns results similar to those shown in Figure 3. Notice the multiline prompt (>>) that precedes each line after the first line. When PowerShell expects a line to continue to a second line, it uses a multiline prompt for that line. You then type the next line of code at that prompt. Once PowerShell enters this *multiline mode,* it will continue in this mode and always prompt you with the multiline prompt. When you finish entering the last line, press Enter a second time to execute the command and return to the normal prompt.

Now suppose you break the statement before the pipe operator:

```
Get-Service
  | where {$_.status -eq 'running'}
  | select displayname
```

PowerShell now interprets the first line as complete and processes it as an entire statement. PowerShell then tries to process the second line, which results in the error message: *An empty pipe element is not permitted.*

You can remedy this situation by adding a back tick (`) to the end of the lines:

```
Get-Service `
  | where {$_.status -eq 'running'} `
  | select displayname
```

The back tick tells PowerShell that the statement continues to the next line. The statement now returns the same information shown in Figure 3.

PowerShell processes any line that it thinks is a complete statement. In other words, it automatically terminates a statement when it reaches a new line unless it thinks that the statement continues. However, you can also manually terminate a statement by adding a semi-colon (;) at the end:

```
Get-Service |
  where {$_.status -eq 'running'} |
  select displayname;
```

This statement returns the same results as those shown in Figure 3.

InstantDoc ID 97958

Sorting Statement Output

In addition to formatting output, you'll often find that you'll want to sort output. To sort output, you use the Sort-Object cmdlet. This cmdlet takes the input objects from the pipeline and sorts them based on the criteria you define. As I mentioned previously, PowerShell streams the results down the pipeline from one command to the next. However, when you sort data, the Sort-Object cmdlet waits until it has all the results (objects) and *then* sorts them. This effectively stops the streaming process until everything is sorted. For a small result set, this isn't a problem, but it could impact performance when retrieving large amounts of data.

Still, the Sort-Object cmdlet can be a handy tool. For example, suppose you want to retrieve a list of the items in the C:\Windows folder. You can use the Get-ChildItem cmdlet in a statement such as

```
dir c:\windows |
where {$_.length -gt 500000} |
sort -property length -descending
```

This statement passes the output object from the Get-ChildItem cmdlet (referenced by the *dir* alias) to the Where-Object cmdlet (referenced by the *where* alias). The Where-Object cmdlet specifies that the length must be greater than (specified by -gt) 500,000 bytes. The results are then passed down the pipeline. When the Sort-Object cmdlet (referenced by the *sort* alias) has all the objects, it sorts them based on the defined criteria.

In this case, the Sort-Object cmdlet first specifies that the sorting should be based on the Length property. The -descending switch indicates that the results should be sorted in descending order, as shown in Figure 6, page 61. If you don't specify the -descending switch, the results are sorted in ascending order. In addition, you can specify more than one property (separated by commas) on which to base the sort order. PowerShell sorts the data first by the first property specified, then by the second, and so on.

Moving Forward

As this lesson demonstrates, the PowerShell pipeline is a powerful feature that lets you combine multiple cmdlets to perform a series of successive operations on one or more objects. You can pipe together multiple cmdlets into a statement, format the output from that statement, specify where to place the output, and even sort the outputted information. In the lessons to follow, you'll learn how to enhance your statements even further so you can take full advantage of PowerShell's pipeline capabilities.

InstantDoc ID 97959

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(contact@rhsheldon.com) is a technical consultant and the author of numerous books, articles, and training material related to Microsoft Windows, various relational database management systems (including SQL Server), and business intelligence design and implementation. He is also the author of the novel *Dancing the River Lightly*.

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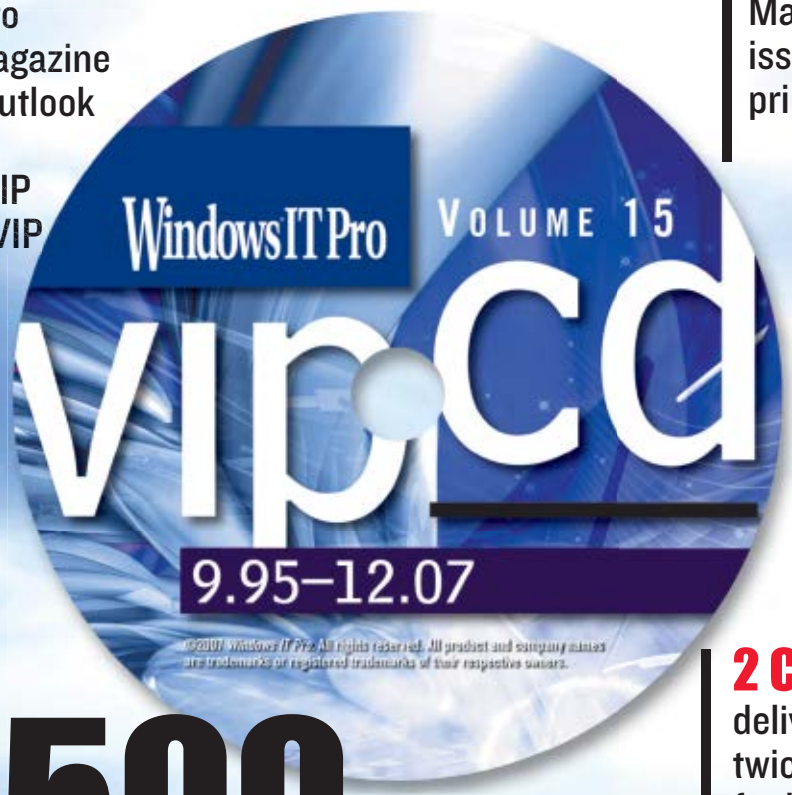

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SPEAKERS

Dan Holme
Dan is Director of Training at Intelliem, a regular speaker at Windows Connections, and site mentor for OfficeSharePointPro.com.

Melissa Fraser
Melissa is a Microsoft Certified Trainer and has a decade of experience in technical education and software development.

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TABLE OF CONTENTS

3	Keynotes	13	Speakers
4-5	Exchange Microsoft Day	14-15	Pre-conference Sessions
6-7	Exchange Sessions	16	Post-conference Sessions
8	Windows Microsoft Day	17	Fall 2008 Events
9-11	Windows Sessions	18	Event Information
12	Office Microsoft Day & Sessions	19	Registration

SCHEDULE AT A GLANCE

SATURDAY, APRIL 26, 2008	
8:00 am - 11:00 am	Registration for Saturday Pre-conference Workshops ONLY
9:00 am - 4:00 pm	Pre-conference Workshops
SUNDAY, APRIL 27, 2008	
7:00 am - 5:00 pm	Conference Registration
9:00 am - 4:00 pm	Pre-conference Workshops
6:30 pm - 8:00 pm	Microsoft Executive Keynote
8:00 pm - 10:00 pm	Expo Hall Reception
MONDAY, APRIL 28, 2008	
7:00 am - 4:00 pm	Conference Registration
7:00 am - 8:00 am	Continental Breakfast
8:00 am - 9:30 am	Keynote
10:15 am - 11:15 am	Conference Sessions
11:30 am - 12:30 pm	Conference Sessions
12:30 pm - 2:15 pm	Lunch
2:15 pm - 3:15 pm	Conference Sessions
3:45 pm - 4:45 pm	Conference Sessions
4:45 pm - 6:00 pm	Expo Hall / Giveaways
TUESDAY, APRIL 29, 2008	
7:00 am - 5:00 pm	Conference Registration
7:00 am - 8:00 am	Continental Breakfast
8:00 am - 9:15 am	Conference Sessions
10:00 am - 11:15 am	Conference Sessions
11:30 am - 12:45 pm	Conference Sessions
12:45 pm - 2:15 pm	Lunch
2:00 pm	*Harley-Davidson Drawing in the Expo Hall*
2:15 pm	Expo Hall Closes
2:15 pm - 3:30 pm	Conference Sessions
4:15 pm - 5:30 pm	Conference Sessions
7:15 pm - 9:30 pm	Connections Party
WEDNESDAY, APRIL 30, 2008	
7:00 am - 8:00 am	Continental Breakfast
8:00 am - 9:15 am	Conference Sessions
9:30 am - 10:45 am	Conference Sessions
11:15 am - 12:30 pm	Conference Sessions
12:30 pm - 2:00 pm	Lunch
2:00 pm - 3:00 pm	Conference Sessions
3:00 pm - 3:30 pm	Ice Cream Break
3:30 pm - 4:15 pm	Closing Q&A
THURSDAY, MAY 1, 2008	
7:30 am - 10:00 am	Post-conference Registration
9:00 am - 4:00 pm	Post-conference Workshops

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KEYNOTES

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SECURITY VS. REALITY: STEVE RILEY'S PERSPECTIVE

STEVE RILEY MICROSOFT

Always a highlight of Windows Connections, we are once again thrilled to be presenting Steve Riley, security evangelist, pundit, and guru. He will share his insightful, expert, and provocative views on the reality of security in today's enterprise.

Steve Riley's career at Microsoft began in 1998 in the telecommunications practice of Microsoft Consulting Services where he worked with several ISPs and ASPs to design highly-available network architectures, develop hosting platforms for various custom and off-the-shelf applications, and deploy complex multi-site VPNs. His specialization in security led him next to the security consulting practice, where he worked with many customers to conduct security assessments and risk analysis, deploy technologies for attack prevention and intrusion detection, and assist with occasional incident response efforts. Steve is now a product manager in Microsoft's Security Business Unit. He is a frequent and popular speaker at conferences worldwide, often appearing in Asia one week and Europe the next; Steve's speaking engagements have included multiple Microsoft TechEds and other conferences, plus SANS, RSA, Black Hat, Windows IT Pro roadshows, and InfoSec US. When not evangelizing the benefits of Microsoft security technology, Steve spends time with customers to better understand the security pain they face and show how some of that pain can be eliminated. Steve's technical specialties include network and host security, communication protocols, network design, and information security policies and process.

NOW THAT LONGHORN'S HERE... HOW DID THEY DO?

MARK MIINASI MR&D

After much waiting, testing, and at least one "throw the code away and start over," Microsoft delivered the Longhorn Twins – Vista and Server 2008, as well as a first (and big!) service pack for Vista. They're not done, of course – we'll see Windows 7 in a few years – but for now, they're what we've got. So how did Microsoft do? What did they miss? What cool things might you not have noticed yet? Join veteran Windows watcher Mark Minasi for a "it's not beta any more, so it's fair to give it a close look" examination of the current state of Windows.

Mark Minasi is an author, a technology columnist, a commentator, a keynote speaker, and an all-around alpha geek. What separates him from many of the other alpha geeks is that he knows how to explain things to normal humans and often make them laugh while doing it. He's probably best known for his books, ***Mastering Windows NT Server*** (Sybex), ***Mastering Windows 2000 Server***, and ***The Complete PC Upgrade and Maintenance Guide*** and his columns in ***Windows IT Pro***. Mark has also authored 17 other technology books, spoken on technical topics in 20 countries, and written and appeared in a dozen technical education videos. His most recent works are ***Mastering Windows 2000 Server***, Third Edition and ***Mastering Windows XP Professional***. He has also written ***Linux for NT/2000 Administrators*** and a seventh edition of ***Mastering Windows NT Server 4.0***.

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EXCHANGE SERVER 2007 SP1 OVERVIEW
MICROSOFT

This session will introduce the latest changes to be introduced in the first service pack for Microsoft Exchange Server 2007. This service pack includes new features such as Standby Continuous Replication (SCR) as well as extensions to existing functionality such as Public Folder access in Outlook Web Access.

EXCHANGE SERVER 2007 SP1 DEPLOYMENT PLANNING
MICROSOFT

Exchange Server 2007 brings with it many new concerns for implementation given the new 'roles-based' nature of the product. Migration approaches are necessarily different from previous versions too, given new hardware dependencies. In this session, we take a comprehensive look at all of the new requirements and techniques. This session has been updated to include SP1-specific content.

MICROSOFT EXCHANGE 2007 ARCHITECTURE AND DESIGN AT MICROSOFT
MICROSOFT

Ever wondered how a large enterprise plans and implements design and architecture of its next generation of messaging system? Join us in this session where engineers from the Microsoft IT messaging team will uncover the details on how Exchange 2007 infrastructure was introduced and fully deployed in a 120,000+ mailbox production environment. Topics will include: messaging topology design, hardware planning for various Exchange server roles, Client Access Server and Mobility scenarios, Transport architecture, Mailbox server and storage designs, backup, restore and high availability strategies.

MICROSOFT WINDOWS POWERSHELL SCRIPTING FOR MICROSOFT EXCHANGE SERVER 2007
MICROSOFT

This session covers the new Windows PowerShell-based Exchange cmdline and scripting interface. Learn how to convert your multiple page Visual Basic and COM scripts to mere one-liners in Microsoft Exchange 2007. We cover the basics of the management shell, as well as the underlying design and key concepts. Additionally, we go into more depth on how to build larger scripts that can be used to automate small and medium, as well as enterprise business scenarios.

MESSAGE SECURITY AND HYGIENE IN EXCHANGE SERVER 2007
MICROSOFT

Come to this session and find out how Exchange Server 2007 can authenticate and encrypt mail within your network. Put your questions to the experts and learn how anti-spam and antivirus can be deployed with Exchange Server 2007 in your environment. Are you interested in how you can maintain system integrity by adjusting spam and virus settings and implementing the appropriate security policies? Ask questions and work through real world scenarios with Microsoft's experts to discover how end-users can also manage junk email.

EXPLORING COMPLIANCE IN EXCHANGE SERVER 2007
MICROSOFT

As e-mail becomes the standard of business communication, companies are increasingly looking for better ways to control their messaging systems. Not only is the sheer volume of e-mail a challenge, but the information stored in them is generally unregulated and can leave a company exposed to litigation. In this session, you'll learn how to deploy compliance and policies within your environment using the various capabilities in Exchange Server 2007. You'll see how you can provide end-users with the capability to keep what needs to be kept; and to expire what is no longer valuable by implementing a Messaging Records Management solution. You'll also learn how transport rules, transport journaling and other capabilities in Exchange Server 2007 can be used to help your organizations achieve compliance.

HIGH AVAILABILITY FOR EXCHANGE SERVER 2007 SP1
MICROSOFT

E-mail has become mission-critical for the large and the small. Businesses and organisations of all types can no longer afford the extended outages of disasters like failed disks, corrupt databases, failed servers, or power outages. Microsoft Exchange Server 2007 provides simplified in-the-box high-availability solutions that make recovery from many disasters barely noticeable to end users. Learn how Local Continuous Replication, Cluster Continuous Replication, Standby Continuous Replication and Single Copy Clusters provide fast recovery for events that used to be called disasters.

STRATEGIES IN DISASTER RECOVERY: FROM DISK TO SITE FAILURE FOR MICROSOFT EXCHANGE SERVER 2007
MICROSOFT

Disasters can range from single database corruption to natural disasters that take out an entire datacenter. Are you prepared for the set of outages that can affect your e-mail service or data availability? Have you defined your strategies for the small to the big outage? This session covers the range of disaster recovery strategies possible in Microsoft Exchange Server 2007, culminating in the ultimate of all disasters – recovering from a full site failure.

EXCHANGE SERVER 2007 UNIFIED MESSAGING: FEATURES AND DEPLOYMENT
MICROSOFT

Microsoft has included Unified Messaging natively in Exchange Server 2007. In this session, learn about the features, benefits, and architecture of Exchange Unified Messaging. See how Exchange can take voicemail and fax messages; how you can call in over any phone to access your voicemail, e-mail, calendar, or contacts; how you can build automated attendants; and how speech access is integrated into the product. Learn how easy it is to configure and deploy Exchange Unified Messaging for your organization.

EXCHANGE UNIFIED MESSAGING: PBX CONNECTIVITY
MICROSOFT

Think Unified Messaging is hard to deploy? Think again! This session will provide an overview of the technical components of Exchange 2007 UM, explain how UM connects to PBX and IP PBX equipment, and sample configurations of simple UM deployments, all in one session!

EXCHANGE 2007 SP1: EXCHANGE ACTIVESYNC AND OUTLOOK WEB ACCESS
MICROSOFT

This session covers enhancements to OWA and EAS in Exchange Server 2007, with particular attention to SP1. See highlights of new SP1 features in both OWA and EAS: e.g., public folders, rules, calendar views and auto-discovery. Hear about the latest mobile scenario security enhancements. Learn about the latest updates to the EAS-OWA better together mobile experience. Get guidance on managing these features. Discover why OWA and EAS together give information workers the most powerful Exchange mobile experience.

EXCHANGE SERVER 2007 SP1: TIPS AND TRICKS
MICROSOFT

This session will provide information on how to get more out of Exchange Server 2007 and Exchange Server 2007 SP1. It includes tips and tricks on con-

figuring Exchange, managing Exchange, using the Exchange Management Shell, and more!

UNIFIED COMMUNICATIONS

INTRODUCING OFFICE COMMUNICATIONS SERVER 2007 AND OFFICE COMMUNICATOR

MICROSOFT

Software-powered VoIP will power the next generation of streamlined business communications. Without expensive infrastructure and network upgrades, Office Communications Server 2007 delivers software-powered VoIP, Web conferencing and enterprise instant messaging along with a rich Presence platform. See how Office Communications Server 2007 enables users to find and communicate with the right person, right now, from the applications they use most whether at the office, at home, or on the road.

MICROSOFT OFFICE COMMUNICATIONS SERVER 2007 ARCHITECTURE AND DEPLOYMENT

MICROSOFT

This session will describe the unified communications architecture behind Office Communications Server 2007 as well as the logical and physical deployment models for the servers. Join us for the session to hear about new capabilities delivered by Office Communications Server 2007. We will be discussing core architecture, server roles and decisions you have to make when planning and designing your Office Communications Server 2007 deployment. Sessions will include deployment best practices and demos. By the end of the session you should have enough background information to start thinking about your own deployment regardless of the size.

PLANNING VOICE ARCHITECTURE AND DEPLOYMENT IN OFFICE COMMUNICATIONS SERVER 2007

MICROSOFT

This session will cover the different voice related components from an architectural perspective, dialplan and routing concepts with specific examples and guidelines, voice deployment scenarios that are supported in Office Communications Server 2007

ADMINISTRATION AND MANAGEMENT OF OFFICE COMMUNICATIONS SERVER 2007

MICROSOFT

Office Communications Server 2007 offers an intuitive and an extensible management interface. Come and ask the experts how you can completely manage your Office Communications Server infrastructure with low overhead. In this interactive session we will take questions on the automation capabilities of the Office Communications Server management interface. Do you want to know how it integrates with Microsoft Operations Manager? Come and ask and how you can use it to monitor your Voice quality.

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MICROSOFT'S WEB CONFERENCING SOLUTION

MICROSOFT

Learn about Web conferencing technology provided by Microsoft Office Communications Server 2007 and the Office Live Meeting service. Microsoft's Web conferencing technology helps businesses connect disconnected organizations with tools for online meetings, events, training, and collaboration while offering choices for deploying this functionality via on-premise server or hosted service. See demos of rich Web conferencing features, such as rich media, two-way audio, and live panoramic video with Microsoft Roundtable. Understand the differences at a feature level between the on-premise and the service offerings.

DEPLOYING AND MANAGING YOUR UC DEVICES: TANJAY, CATALINA, ROUNDTABLE

MICROSOFT

In this session you will learn about how to deploy and manage UC Devices, that is Office Communicator Phone Edition (codename "Tanjay") and Microsoft RoundTable. These devices are designed to be plug-and-play and they are, but there are a number of infrastructure requirements for it to work. You will learn about these infrastructure requirements (DHCP, DNS, NTP, Certificates, Exchange 2007) and we will explore in detail the OCS 2007 Software Update Service. This component is able to update UC Devices with new firmware and in general includes a number of additional management features for UC Devices. After this session you will be able to understand what is needed to deploy UC Devices and you will know how to maintain the devices.

SOFTWARE POWERED VOIP: TOPOLOGY AND CONFIGURATION

MICROSOFT

In this session we will start with everything outside of the server, the wider environment to which Office Communications Server will integrate and planning for deployments of Office Communications Server (Office Communications Server) 2007. We will present the different enterprise environments that you will find on customer sites and the scenarios to integrate Office Communications Server 2007 with each of the different environments. You will learn about where to place Mediation Server and Gateways, which Gateways are supported, and how to provision the gateways for optimum capability. Following this you will also learn about everything inside the server, including Location profiles, Number Normalization rules, Reverse Number Lookup and how to configure routes on Office Communications Server 2007. You will learn how to restrict users from dialing unauthorized numbers by using phone usages and what you have to consider when you deploy in conjunction with existing PBX environments.

MIGRATING FROM MICROSOFT OFFICE LIVE COMMUNICATIONS SERVER (LCS) 2005 TO OFFICE COMMUNICATIONS SERVER (OCS) 2007

MICROSOFT

Migrating an LCS 2005 SP1 environment to Office Communications Server 2007 requires careful planning for server deployments and client deployments. The session will present the most important aspects that drive the deployment and migration strategies and provide recommendations on how to accomplish a successful migration.

DIVE INTO THE NEW RELEASES WITH MICROSOFT ARCHITECTS AND INDUSTRY EXPERTS!

SOMETIMES SIP JUST AIN'T ENOUGH
MICHAEL PRZYTULA

This session will look at some of the issues you can encounter when natively integrating IP-PBX's with OCS Enterprise Voice functionality, such as dealing with E.164, RNL, backboning multiple IP-PBX' via OCS, number normalization, and many other interoperations issues as well as the ways to work around some current native limitations.

MONITORING OCS WITH MOM AND QOE SERVER
MICHAEL PRZYTULA

What is the Quality of your Users' experience (and the people they call) since you have deployed OCS to provide your companies voice services? Is the service stacking up against the quality of calls you had on your traditional PBX before OCS? This session will look at how you can use the combination of MOM and the OCS QoE Server to analyze your organization's use of OCS Voice and Video services, pinpoint any poor quality hotspots and take moves to address them.

OPTIMIZING MICROSOFT ROUNDTABLE DEPLOYMENTS
MICHAEL PRZYTULA

The ultimate Plug-and-Play device, right out of the box, you can plug it in and start using its 360° panoramic video and VoIP capabilities; however, there is much more you can do to further optimize your experience with Microsoft RoundTable. This session will look at the finer points of tuning RoundTable to provide the most optimized experience in rooms of different shapes, sizes, configuration, lighting conditions, and even different countries! Using details from this session, you will be able to enhance your users' collaboration experiences even more!

WINDOWS FAILOVER CLUSTERING FOR EXCHANGE ADMINISTRATORS
JUERGEN HASSLAUER

In the past the majority of Exchange deployments used standard servers so many Exchange administrators have limited exposure to clustering technologies. With the introduction of Cluster Continuous Replication (CCR) in Exchange Server 2007, the pros and cons for clustering Exchange have to be reevaluated. Windows Server 2008 will additionally increase the number of clustered mailbox server deployments. Therefore, it is necessary that Exchange administrators understand the Windows Failover Clustering concept. This session describes the different cluster architectures used by the two implementation alternatives for a Clustered Mailbox Server (CMS) in Exchange Server 2007, CCR, and Single Copy Cluster (SCC). You will learn how Windows Server 2008 simplifies the setup and management of a cluster and what you have to consider for a geographically dispersed deployment of a CMS.

EXCHANGE SERVER 2007 CONTINUOUS REPLICATION
JUERGEN HASSLAUER

Exchange Server 2007 supports continuous data replication and enables administrators to create a second copy of the data stored in the information store. We will discuss Local Continuous Replication (LCR), Cluster Continuous Replication (CCR), and Standby Continuous Replication (SCR). You will learn how you can use these application built-in replication methods for geographically dispersed deployments. This session will help you to make an informed decision about when to use LCR, CCR, SCR, or a traditional storage-based replication solution from a third-party vendor.

OFFICE COMMUNICATOR: EXTEND YOUR MESSAGING ENVIRONMENT WITH REAL-TIME COMMUNICATION
JIM MCBEE

Many IT managers and professionals equate popular instant messaging applications with corporate-level, real-time communications and thus dismiss the concept all together. The quick dismissal of this emerging technology may be denying your organization powerful new tools for collaborating. We are on the verge of a new step in real-time communication evolution that will integrate functions of e-mail, calendaring, and instant messaging. Come to this session to learn about some of the exciting developments in the convergence of and integration between Office Communicator, Exchange Server, voice mail, and your telephone.

EXCHANGE 2007 MIGRATIONS: LESSONS LEARNED IN THE FIRST 100 DAYS
JIM MCBEE

Follow the real-life implementation of an early adopter of Exchange 2007. This session will start with an overview of an organization's Exchange 2000 architecture and some of their goals for an early implementation of Exchange 2007. The session will then cover the planning process, server consolidation factors, hardware requirements, existing software that integrates with Exchange, and meeting prerequisites. This session will also include many of the hurdles that this organization faced in completing their migration.

EXCHANGE STORAGE SIZING AND HARDWARE EXPOSED
JIM MCBEE

Some messaging professionals view the process of sizing disk capacity as nothing more than tossing a lot of disk storage at the Exchange server and hoping it will be enough. This approach frequently yields poor results. If you have enough disk capacity, there is still no guarantee that you have sized the disk I/O capacity necessary to support your user community. In this session, you will learn not only about the factors that affect disk storage capacity, but also how to anticipate the I/O capacity. Topics include estimating message data storage, determining factors that increase disk storage overhead, calculating I/O capacity, and determining if you have sufficient I/O capacity for your current user community.

EXCHANGE PROTECTION USING DATA PROTECTION MANAGER
DEVIN GANGER

Backing up and restoring Exchange servers is an essential part of keeping your messaging infrastructure up and running, even when you're running an advanced clustering configuration. Why should you consider using Microsoft System Center Data Protection Manager 2007 to protect your Exchange servers and clusters? What configurations are supported and what limitations does this place on my Exchange design? This session covers protecting Exchange 2003 and 2007 servers' clustered configurations, including the new Exchange 2007 replication options.

DISCOVERY, COMPLIANCE, ARCHIVAL, AND RETENTION WITH EXCHANGE
DEVIN GANGER

Discovery, Compliance, Archival, and Retention: they're challenges every Exchange administrator faces. Whether you're using Exchange 2000, 2003, or 2007, join the author of the Windows IT Pro Email Discovery and Compliance e-book to find out how to solve these challenges using Exchange. Find out what you can do out of the box and when you'll need to invest in third-party software.

UPGRADING TO EXCHANGE SERVER 2007: BEST PRACTICES
DEVIN GANGER

The common knowledge says that upgrading to Exchange 2007 isn't nearly as hard as the upgrade from Exchange 5.5. That's not to say that it doesn't present its own set of challenges—and if you're caught by them, it will still feel like getting run over by a truck. This session will present some of the common gotchas and how to avoid them. Be at the head of the upgrade parade, not caught in the wheels. This session has been upgraded to include the latest information on the SP1 release.

CUSTOMIZING OUTLOOK WEB ACCESS IN EXCHANGE 2007
WILLIAM LEFKOVICS

Some enterprises may want to enforce branding of Outlook Web Access. A disclaimer or policy statement regarding use of corporate e-mail resources may accompany a customized Logon screen. We

will also look at creating themes with OWA 2007 using Cascading Style Sheets (CSS). The tools we will use for this adventure include Microsoft Expression Web. We will create a custom OWA as part of the demo.

TRANSPORT RULES WITH EXCHANGE 2007/OUTLOOK 2007

WILLIAM LEFKOVICS

We will make a CASE (Conditions, Actions, Scope, Exceptions) for the value of transport rules and how they may be used within an organization. This includes the use of ethical walls, appending text to messages, and enforcing policy. We will also show how Outlook 2007 message classification and categorization can be used to further empower transport rules. We will compare how transport rules differ between the hub and edge transport servers and create rules with the Exchange Management Console as well as the Exchange Management Shell.

MESSAGE HYGIENE IN EXCHANGE 2007 AND THE ANTI-SPAM MIGRATION TOOL

WILLIAM LEFKOVICS

We'll cover how to implement and configure the Transport Agents for anti-spam for Edge or Hub Transport servers with emphasis on the layered "Defense-in-Depth" approach. We will also cover migrating Anti-spam settings from Exchange 2003 to an Exchange 2007 Edge or Hub Transport Server using the Microsoft Exchange Anti-spam Migration Tool. We will use both the Exchange Management Console and the Exchange Management Shell to configure message hygiene settings.

MOBILE DEVICE SECURITY

JOHN RHOTON

The biggest obstacle deterring enterprises from the deployment of mobile devices is the concern around security risks that these devices expose. The content is vulnerable since mobility implies physical presence in public and uncontrolled environments using connectivity that is unmonitored and unmanaged by the enterprise. Devices are often lost or stolen. Wireless transmissions are physically accessible to anyone. Public networks may harbor malware, probes, denial-of-service attacks, and many other threats that can compromise the device, and potentially through it, assets on the corporate network. This presentation discusses the primary wireless and mobile concerns and the mechanisms that can be used to address them. It will provide an overview of the products offering mobile security solutions and also proposes best practices in developing a complete security framework that can enable mobility without unacceptable risk to the enterprise.

MOBILE DEVICE MANAGEMENT (MDM)

JOHN RHOTON

The biggest challenges in initially deploying a mobile application are to provide connectivity and security. Once this has been achieved scalability becomes a growing concern. The infrastructure itself may scale very well but any manual process to provision, update, and support a large number of devices will become very costly. Mobile device management includes automatic configuration of mobile devices, software deployment, remote configuration and updates, inventory, and policy enforcement. This session will provide an overview of the OMA-DM (Open Mobile Alliance–Device Management) standard, typical MDM architectures, market leading products (including Microsoft System Center Mobile Device Management) and provide insight into the challenges and best practices in deploying MDM.

POWERSHELL FOR BEGINNERS

PAUL ROBICHAUX

The Exchange Management Shell (EMS) is a key part of the Exchange 2007 experience. What if you're not a scripter? Don't worry; you can still get plenty done with EMS after just a little learning. This session covers the basics of what you need to know about how EMS works and what you can do with it.

PROTECTING DOCUMENTS AND E-MAIL MESSAGES WITH RIGHTS MANAGEMENT SERVICES

DUNG HOANG-KHAC

Have you ever wished that your internal e-mail messages or confidential documents stored on SharePoint would not go into the wrong hands? Have you ever been thrilled to know who has access to your documents and who does not? Come to this session to learn about Active Directory Rights Management Services. AD RMS is now a Windows component integrated with Windows Vista and Windows Server 2008 and is a Windows platform protection technology used to enable secure collaboration between multiple organizations. With AD RMS, you can ensure that sensitive documents are encrypted and authorization rights are set within the documents. Every time a user opens a document, permissions are always checked no matter where this document resides, inside or outside of your organization!

CONSOLIDATING MANAGEMENT OF EVENT LOGS

DUNG HOANG-KHAC

After deploying Exchange 2007, you are enjoying management of Exchange servers from a single GUI console or from its powerful command line interface. However, to monitor events that have occurred in an Exchange environment, you still need to employ different tools to consolidate Exchange events in a central location for further analysis. There are several free but unsupported tools that help collect event logs from remote servers, and then it's up to administrators to browse through those files and filter out noise events to extract useful information. Wouldn't it be nice if the operating system could do the work for you? Simply specifying the event IDs you are interested in monitoring, a group policy that includes selected Exchange servers, and a rule to collect those events, and then you're done! Come to this session to learn about the new event architecture and remote management in Windows Server 2008 and see how you can leverage the new event forwarding feature to better manage your application servers today! By the way, event forwarding also works on the Windows Server 2003 environment too, so you don't need to wait for an upgrade.

HARLEY-DAVIDSON GIVEAWAY

Enter to WIN

Enter the contest in the Expo Hall to

WIN a Harley- Davidson!

The winner will drive one home.

MOTOR HARLEY-DAVIDSON CYCLES

WINDOWS
SESSIONS PRESENTED BY MICROSOFT

MICROSOFT DAY • MONDAY, APRIL 28, 2008 • MICROSOFT DAY

WINDOWS SERVER 2008 OVERVIEW
MICROSOFT

Windows Server 2008, in addition to incorporating new capabilities and enhancements to existing features, includes a number of improvements in the core OS that enhance the Operating System's capabilities in this area. Features aimed at increasing the ability of Windows Server 2008 to support highly critical workloads by improving operational reliability, reducing system failures, and easing management. We will also discuss improvements in other related elements in the platform that help Windows based systems and services help move an organization's IT Department forward.

WINDOWS SERVER 2008 VIRTUALIZATION TECHNOLOGIES
MICROSOFT

The new Windows Server Virtualization technology, Hyper-V, and Presentation Virtualization technologies like Terminal Services RemoteApp are core features in Windows Server 2008. This session will provide you an overview of virtualization in Windows Server 2008, the scenarios, features, and benefits that make server virtualization an important scenario. Virtualization management is becoming a critical tool for improving overall manageability for the IT environment. Join us in this session to learn how Hyper-V and our management technologies build a strong flexible platform and improve overall manageability.

WINDOWS SERVER 2008 WEB AND APPLICATION TECHNOLOGIES
MICROSOFT

Take a look at all the changes coming in the new, redesigned Internet Information Services (IIS) 7 and Windows Web Server 2008. This session focuses on new troubleshooting features, a breakdown of architecture and security improvements, and the new IIS 7 configuration system, remote management, extensibility, business value, etc.

WINDOWS SERVER 2008 SECURITY AND COMPLIANCE TECHNOLOGIES
MICROSOFT

Windows Server 2008 offers rich capabilities for securing your IT Infrastructure and proving tools to ease with compliance mandates. This session will discuss the Windows security and compliance features such as Network Access Protection, Right Management Services, and Active Directory Federation Service subsystem, why auditing is important, and how to configure an audit policy updated Windows Server 2008 event subsystem.

WINDOWS SERVER 2008 PERFORMANCE AND SCALABILITY
MICROSOFT

A discussion of Windows Server 2008 OS performance features, results, and references. The presentation will cover the themes behind the performance investments on Windows Server 2008 and how they are applicable to real-world scenarios. Some of the areas covered are file serving, networking advancements, Web and application serving, virtualization, terminal services and general scale-up advancements.

Replicate server images to remote locations for rapid recovery in disaster scenarios!

IDENTITY AND ACCESS TECHNOLOGIES IN WINDOWS SERVER 2008
MICROSOFT

Windows Server 2008 is an advanced operating system that can help you maximize control over your infrastructure while providing higher availability and management capabilities, leading to a more secure, reliable server environment. In this presentation, learn how you can help your organization reduce identity and access security risks with Windows Server 2008. We also examine how Windows Server 2008 can help you decrease operational costs, satisfy regulatory requirements, and deepen relationships with customers and partners.

MANAGEMENT TECHNOLOGIES IN WINDOWS SERVER 2008
MICROSOFT

Windows Server 2008 makes significant improvements in server manageability with a one-stop administrative solution called Server Manager. This streamlined management tool allows IT administrators to complete setup of Windows Server using the Initial Configuration Tasks page, and configure and manage server roles and features with prescriptive wizards, a unified management console, and a command-line interface. This session will present and demonstrate the configuration and management capabilities of Server Manager and introduce some new features of Server Manager in the Windows Server 2008 including integration of the Hyper-V role and Remote Server Administration Tools. We will also explore how Windows PowerShell, Windows Remote Administration, and Event Forwarding can be part of an overall server management strategy.

WINDOWS SERVER AND VISTA : SOLID ENTERPRISE
MICROSOFT

In this session, we discuss many new features shared by the Windows Vista and Windows Server 2008 operating systems. We start by talking about why Windows Server 2008 and Windows Vista are so closely related, and how together they enable many new and exciting features that promote more efficient management. We talk about the new features that make data more available, such as improvements to offline files, client-side print rendering, the transactional file system, and policy-based Quality of Service (QoS). Finally, we review such things as the new TCP/IP stack and Server Message Block (SMB) 2.0 protocol that speed network communications in Windows Server 2008 and Windows Vista. Attend this session to learn how Windows Server 2008 and Vista work better together.

SESSIONS AND SPEAKERS ARE SUBJECT TO CHANGE. SEE WEB SITE FOR UPDATES AND ADDITIONAL SESSIONS.

SECURITY

WSE201: REIMAGINING FILE SHARE SECURITY AND MANAGEABILITY
DAN HOLME

Windows Server 2008 improves on the solid performance and functionality of previous versions of Windows file services. Features such as file screens, quotas, DFS Namespaces, access-based enumeration, and the powerful new Owner Rights identity are important pieces of the puzzle. But to implement the perfect file server, you need more. You need the ability to answer the questions, "Who has access to this file?" and "What can John Doe get to?" Get the free tools and scripts you need for a more manageable file server. This session will cover: Changes to the capabilities and functionality of security user interfaces and NTFS permissions; The new Owner Rights identity; Access-based enumeration (ABE); Symbolic links; Provisioning secured shared folders; Abstracting the storage and presentation of data folders for manageability and security; File screens; Quotas; Custom scripts and tools to analyze and report file and folder access.

WSE301: ROLE-BASED MANAGEMENT: EXTREME MAKEOVER
DAN HOLME

Get out of the business of managing individual changes in your environment and unleash the power of role-based management. If you've ever asked, or been asked, "What can [name of user] do?" or "Who is able to get to [name of resource or application]?", this session is for you! In this you will learn how to implement role-based management, in which users are defined by their business roles and where resource access and configuration are instantly, accurately, and auditably applied. Empower your enterprise to enable a documented, auditable structure for resource security, asset management, and more. Take away methodologies, scripts, tools, and guidance that are proven successful in the real world. This highly rated session is one of a kind and only at Windows Connections.

WINDOWS TECHNOLOGIES

WWN322: 64-BIT WINDOWS SERVER 2008 VERSIONS: WHY SHOULD YOU CARE?
GUIDO GRILLENMEIER

In 2008, if you are an IT administrator and you are not aware of the ins and outs of 64-bit Windows, you have a problem. Driven by the need to deploy the 64-bit Windows OS to support applications such as Exchange 2007, what are the challenges you'll face when moving down the 64-bit road: What does this mean for your 32-bit applications? Will they work and how? Will they perform better or worse? When considering deployment of Windows Server 2008, should you leverage the x64 architecture or move to Itanium? What's really the difference between the two? How does Windows Server 2008 support either architecture? This session explains the most important things to know about the different 64-bit Windows architectures and why you should care about them. Special focus will be put on 32-bit compatibility challenges and solutions as well as discussing deployment scenarios for the 64-bit versions of Windows Server 2008.

WWN323: ACTIVE DIRECTORY DISASTER RECOVERY IN WINDOWS SERVER 2008
GUIDO GRILLENMEIER

Backing up and restoring your complete Active Directory forest—or objects that you have accidentally deleted in a domain—has always been a lot of fun with previous versions of the Windows Server OS. Come to this session to find out how much more fun you can have restoring your AD or specific objects with Windows Server 2008! Microsoft has invested a lot of resources to completely overhaul the mechanisms and tools to back up Windows Servers in this OS release. This change has various impacts on the strategy you use to back up your AD Domain Controllers and how you restore them. It may even impact how you configure your domain controller disk subsystem. But there is a lot of good news when it comes to recovering objects in AD, which will be demonstrated in detail in this session. We'll also discuss those recovery tasks that continue to be a challenge.

WWN321: ADMINISTRATORS' IDOL: THE COOLEST SESSION EVER
DAN HOLME

OK, the title got your attention at least, right? So here's the scoop. From his work with thousands of IT professionals, from the CIOs of Fortune companies to front-line support professionals at the Olympic games with NBC, Dan has amassed a wealth of tricks to boost your productivity as an administrator. In this fast-paced session, Dan will share how to build truly amazing administrative toolsets that extend your reach, automate tedious tasks, and enable your entire IT organization to work smarter, faster, and more securely. You'll learn tricks that will amaze not only your friends and coworkers, but yourself as well. Typically part of a post-conference workshop, we've brought this gem into the main event as a fantastic way to cap off your Windows Connections experience. Don't miss it!

WWN221: BREAKING UP IS HARD TO DO: DIVESTING RESOURCES OUT OF YOUR AD
SEAN DEUBY

Acquisitions and divestitures are a fact of business life. This doesn't mean that moving a business unit out of your Active Directory is an easy task, however. You have to juggle the technical aspects of removing the affected unit's users, groups, and computers while keeping disruptions of all involved parties to an absolute minimum—all without violating either company's information security policies. This session will step you through a large divestiture based on real-life experience, pointing out requirements, pitfalls, and best practices along the way.

WWN220: DNS 2008 STYLE: HOW NAME RESOLUTION CHANGES IN SERVER 2008 INFRASTRUCTURES
MARK MINASI

Server 2008's here, and so is DNS, 2008 style! What's the story with WINS, is it time to go? How does 2008's DNS affect Active Directory? What about those new "magic" records, the DNAME and GLOBALNAMES feature? And most importantly, how the heck do I administer a DNS server running on Server Core? Find out with the Master of Name Resolution, Mark Minasi!

WSE302: INCREASING THE SECURITY IN YOUR ACTIVE DIRECTORY USING WINDOWS SERVER 2008
GUIDO GRILLENMEIER

Active Directory has received various security updates in Windows Server 2008, some of which are hard to miss, such as the capability to deploy Read-Only Domain Controllers (RODC). However, there are plenty of other enhancements hiding under the hood that AD administrators should know about to further tighten the security in their AD infrastructures. This includes features such as Owner Access Restriction, Fine Grained Password Policies, various updates around the Auditing capabilities of Active Directory, and the Admin-Role Separation feature for RODC. This session will explain how best to leverage the various new features to ensure the operation of a secure Active Directory with Windows Server 2008.

WWN222: MIGRATION STRATEGIES FOR WINDOWS SERVER 2008
SEAN DEUBY

Whether you're in the role of a single server administrator or owner of a corporate Active Directory, upgrading to Windows Server 2008 requires thorough planning and testing. This session will review different migration strategies for

Understand administrative templates (ADM and ADMX files)!

several Windows Server 2008 roles, with a focus on upgrading your Active Directory forest.

WWN325: NOW THAT YOU'VE GOT IPV6 (IN VISTA AND 2008), WHAT TO DO WITH IT?

MARK MINASI

Vista has arrived. 2008's arrived. And with them they bring...IPv6. Your first reaction when you see an IPv6 address like "fe80::5efe:10.50.50.112" might be "hmmm... that's a lotta colons, and I KNOW what comes out of colons!," but is that the RIGHT reaction? Join veteran Windows explainer Mark Minasi in a look at the latest version of IPv6... and whether you'll want to leave it on or turn it off.

WWN101: PLANNING FOR WINDOWS SERVER 2008 AND VISTA LICENSING

SEAN DEUBY

Any rollout of Windows Server 2008 or Vista requires planning for Volume Activation 2.0. If you don't, your systems will grind to a halt a month after you've deployed them. You have to make a number of design decisions for your VA 2.0 infrastructure; this session will provide you with key information from practical experience to help you plan.

WWN326: SERVER CORE STEP BY STEP: GOING COLD TURKEY ON THE GUI

MARK MINASI

For years you've known it: you've just GOT to get more familiar with the command line. You get things done faster, you can create simple batch files for automating many tasks, and, best of all, when you're working from the GUI, your boss starts to think: "Hey, what IS that thing he/she's using? We need to pay techie employees like them more money!" Well, Windows 2008's command-line-only Server Core's arrived, so here's your opportunity. Building on his popular "Command Windows from C: Level" talk, Mark Minasi walks you through the process of building a Server Core server from setup to initial configuration to full-blown DNS, Active Directory, and more.

WWN327: WHY UPGRADE TO SERVER 2008? FOR THE NEW AD BENEFITS, MOSTLY

MARK MINASI

Why upgrade to 2008? Heck, we could just wait for SP1, right? Maybe not. 2003's Active Directory is pretty good, but, honestly, it could be better. Branch office DCs are a real pain, both from a security and a bandwidth point of view. But Server 2008 offers some relief with the concept of a "read-only domain controller" that flexes Kerberos' muscles in a way that Windows hasn't really before. You'll get the ability to dial in exactly which user accounts are stored on a branch office DC, as well as new encryption options to make it theft-proof. But that's not all—DCPROMO gets a facelift and, well, it needed it. Even better, AD actually comes with a disaster recovery tool... neat, eh? Come to this session presented by Windows expert and bestselling author Mark Minasi to find out whether or not the bundle of AD benefits might be the thing that sells you on 2008!

Implement role-based management for dramatic increases in manageability, security, auditability and compliance!

POWERSHELL

WPO201: MANAGING DIRECTORY SERVICES WITH WINDOWS POWERSHELL (BRING YOUR OWN LAPTOP)

JEFF HICKS

In this session we'll explore the different approaches you might need to manage directory services with PowerShell. Not only will we look at Active Directory management, but we'll also discover how to manage local users and groups through PowerShell. Our exploration will include native PowerShell functionality, a smattering of Exchange 2007, and free third-party PowerShell extensions.

WPO202: MANAGING SERVERS AND DESKTOPS WITH WINDOWS POWERSHELL AND WMI

JEFF HICKS

Although PowerShell is an incredibly valuable administrative tool, a major feature is its support for Windows Management Instrumentation (WMI). In this session we'll review what WMI is and why you should care. Then we'll delve into the different ways you can leverage WMI in PowerShell to gather a great deal of system information and to configure and manage systems as well.

WPO101: POWERSHELL IN WINDOWS SERVER 2008

JEFF HICKS

Windows Server 2008 promises to change the way we manage our servers once again. PowerShell also will be changing the way we manage our servers. In this session we'll discover how PowerShell and Windows Server 2008 work together, what it takes to make them work together, and how you can get the most out of the combination to simplify your life.

BUSINESS

WIB201: EVERYTHING YOU NEED TO KNOW ABOUT STORAGE TECHNOLOGIES BUT WERE AFRAID TO ASK

ALAN SUGANO

If your company is like most companies, you are probably running low on disk space as storage hungry applications eat up disk space like contestants in a pie-eating contest. But what's the best solution for your company? With the advent of newer drive interface technologies like Serial Attached SCSI (SAS) and Serial ATA (SATA), there is a lot more to choose from when selecting a storage solution. This session will cover the storage basics of locally attached storage, network attached storage (NAS), just a bunch of disks (JBODs), and storage area networks (SANs), what they are, where they are typically used, and how they fit into a comprehensive storage strategy for your company. We'll also look at the enhancements to Windows Storage Server (WSS) that are scheduled to be released with Windows Server 2008.

DEPLOYMENT, GROUP POLICY, MANAGEMENT

WID201: GROUP POLICY 2.0 PART I: NEW GOODIES

JEREMY MOSKOWITZ

What's new in Group Policy? Short answer: lots. With Microsoft releasing Windows Server 2008 there are hundreds of new settings, plus the biggest bombshell to hit Group Policy since Group Policy itself: the new Group Policy Preference Extensions! So come hear the essential "What every admin absolutely needs to know" about Windows Vista and Group Policy. Learn why you need a Windows Vista management station. Learn how to get out of burning 5MB per GPO on each DC. Learn about the new things you can do (like power management and USB port management)—only for Windows Vista clients. See the 20-odd new "big things" Microsoft has gifted every administrator. If you have even one Windows Vista client that you're going to deploy, you positively must come to this session to learn the ropes from Jeremy Moskowitz, Group Policy MVP. (Note that some material in this session is covered in Jeremy's pre-conference workshop.)

WID302: GROUP POLICY 2.0 PART II: TROUBLESHOOTING

JEREMY MOSKOWITZ

In Part II we'll discover how the beauty of Group Policy changes is not skin deep. There are some

Maximize the benefits and minimize the impact of IPv6 on your network!

basic and detailed changes lying under the hood. And Jeremy Moskowitz of GPanswers.com and author of Group Policy: Management, Troubleshooting and Security is just the guy to bring it to you. In this session, you'll learn why you can't just run gpresult.exe any more and get the results you want. You'll discover what happens if you reconnect to the network after a long absence. You'll learn how to crack open the new Vista event log and trace Group Policy flow to figure out what might be going on. You'll learn how other areas, like Offline Files and Group Policy Software Installation, can be tweaked to give you just the information you need to fix what ails you. If you're looking for Group Policy answers to your troubleshooting questions, this is the session for you. (Note there is some material that is also covered in Jeremy's pre-conference workshop.)

VIRTUALIZATION

WVI205: INCORPORATING VIRTUALIZATION INTO DISASTER RECOVERY

ALAN SUGANO

A comprehensive Disaster Recovery Plan is something that every company should have and hopefully will never have to use. Having a plan in place that provided a road map to recovery was adequate in the past, but recent emphasis has been placed on the speed of the recovery. Sarbanes-Oxley (SOX) compliance companies must disclose their business continuity plans and the company's exposure to a prolonged outage and how it affects financial reporting. Virtualization can significantly reduce the recovery time for a major disaster, by providing a warm or hot remote recovery site and accelerate workstation and server setup.

WVI104: SOFTGRID 101

JEREMY MOSKOWITZ

Let me guess: your machines just "blow up" now and again. And I know why. It's because you have a zillion applications on them with a half a zillion conflicts and things just "deteriorate" over time. Wouldn't it be neat if you could just eliminate that problem altogether? Well, with Microsoft's newest acquisition, Softgrid, you can. It works by "wrapping up" your existing software into "sequences", and then putting them into a virtual sandbox. The upshot? Your applications aren't running "on" Windows. They're running within the sandbox. So, no more desktop deterioration. Softgrid is a big place, but come to this session to make sure you know the ins and outs before you get it in your organization!

WVI206: VIRTUALIZE NOW!

RICK WATSON

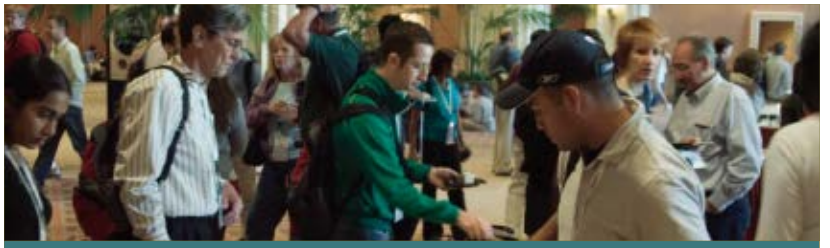
This session explains virtualization concepts and compares various virtualization technologies. It explores the issues and benefits of moving production systems into a virtual environment. Issues: storage considerations, networking configuration, and system compatibility. Benefits: Reduces the cost of rack space and power. Consolidation ratios commonly exceed ten virtual machines per physical server; Decreases labor costs by simplifying and automating IT operations across disparate hardware, operating system, and software applications; Enables cost-effective application availability independent of hardware and operating systems; Enables continuous uptime and non-disruptive maintenance with live migration of entire running systems; Eliminates the need for repetitive software installation and configuration; Accelerates the application development and deployment lifecycles; Improves responsiveness with instant provisioning and dynamic optimization of application environments; and Allows legacy systems to co-exist with new environments.

WVI207: VIRTUALIZING ACTIVE DIRECTORY

RICK WATSON

Windows Active Directory plays an important role in today's IT environment. In this session, learn how to successfully implement Windows Active Directory using virtualization. The session will demonstrate using VMware Virtual Infrastructure 3, but the concepts and skills covered can be applied with other products. Topics covered: Guidelines for clock synchronization; Effective use of security roles; Placement of Flexible Single Master Operations (FSMO) roles and global catalog servers; Backup techniques and disaster recovery options to minimize loss and downtime; Successfully transitioning from a physical to a virtualized infrastructure; and Managing network policies including DNS configurations.

SESSIONS AND SPEAKERS ARE SUBJECT TO CHANGE. SEE WEB SITE FOR UPDATES AND ADDITIONAL SESSIONS.



CONNECTIONS PARTY

Tuesday, April 29, 2008

BBQ & CASINO GAMES

Subject to weather conditions.

Re-engineer the security of file servers to increase manageability, compliance, and auditability.

Decrease backup times of shared folders by managing security with role-based access control.

Secure your resources: Creator Owner "out", Ower Rights "in."

MICROSOFT DAY • MONDAY, APRIL 28, 2008 • MICROSOFT DAY

INTRODUCING THE OFFICE SECURITY GUIDE
MICROSOFT

In this session, learn about the new Office security guide to help you learn about securing the Office desktop. By attending this session, you'll get an overview of the guide itself, as well as helpful tips and techniques for improving the security of each Office installation. Topics covered will include protection of sensitive information, deployment configuration strategies, and more.

MANAGING APPLICATION COMPATIBILITY WITH CONVERTER TECHNOLOGIES
MICROSOFT

In this session, learn how Converter Technologies can help simplify your deployment by helping understand and plan for application compatibility challenges for your deployment. We will also discuss the tools used to test legacy Office applications and documents for compatibility with next generation Office System products.

NEW TOOLS AND TECHNIQUES FOR DEPLOYING THE OFFICE 2007 SYSTEM
MICROSOFT

The 2007 release of the Microsoft Office system offers several new tools to speed and simplify the client deployment process. In this session, you are introduced to the new Setup and Customization technologies (only one tool now instead of all those wizards!). This presentation offers a drill down of each tool, guidance for their use, and suggestions for making your deployment a success.

OFFICE MIGRATION PLANNING MANAGER
MICROSOFT

Use the Office Migration Planning Manager to help assess your customer's document environment readiness for Office 2007. Topics include benefits and usage, scanning of documents with the provided file scanner, identifying possible document conversion issues with the new Office 2007 XML formats, and finding documents with VBA projects and macros. We'll also cover the graphical Access 2007 front-end for doing SQL queries of the data collected.

OFFICE CONNECTIONS CONFERENCE SESSIONS • APRIL 29 & 30, 2008

WSH203: CREATING COST-EFFECTIVE PARTNER SITES IN WSS
JEFF WEBB

How to set up an Internet-facing site for collaborating with external partners using WSS. This session covers how to isolate and secure the server and set up forms-based authentication in a way that allows external users to manage their own passwords, receive e-mail alerts, and participate in workflows. It covers the hardware, licensing, and customization needs for partner sites with a focus on security and minimizing costs.

WEX201: MOSS 2007/EXCHANGE 2007 MANAGED FOLDERS
MELISSA FRASER

The compliancy features of Microsoft Office SharePoint Server 2007 are very compelling. With the use of MOSS 2007 and Exchange 2007 together, these compliancy features may be extended beyond traditional document libraries. E-mail messages stored on servers can also be included. In this session, we will discuss the ins and outs of including Exchange 2007 e-mail messages as part of records management. Session topics include: Planning e-mail retention policies; Configuring managed folders; Configuring information management policies on folders, and Implementing journaling.

WSH201: SAY G'BYE TO FILE SHARES: 21ST CENTURY COLLABORATION WITH WSS DOCUMENT LIBRARIES
DAN HOLME

It's time to start moving your shared folders to SharePoint. Why? Because the features that we've all been missing—including document metadata, checkout, version control, and content approval—are now achievable using Windows SharePoint Services document libraries. Learn how to move forward into a new era of document management in this practical application of SharePoint.

WSH202: SHAREPOINT, BUSINESS, AND END-USER PRODUCTIVITY: OFFICE 2007 APPS AS SHAREPOINT CLIENTS
DAN HOLME

While SharePoint offers great functionality through its out-of-the-box Web interface, you really "kick it up a notch" when you add Microsoft Office 2007 applications to the mix. This session, appropriate for IT professionals, end users, and managers, will highlight some of the exciting ways you can integrate Office apps and SharePoint, including document libraries, Excel and Access integration, slide libraries, and taking files offline with Outlook. You'll also learn what to expect from different versions of Microsoft Office clients and of SharePoint. And you'll discover tricks and traps related to configuring SharePoint, even with forms-based authentication, for client integration.

WSH204: TROUBLESHOOTING SHAREPOINT: WHEN GOOD SERVERS GO BAD
JEFF WEBB

How to detect, isolate, debug, and fix problems when they occur. This session walks through common issues and shows you how to run down the problem through the logging services that Windows, SharePoint, SQL, and IIS provide. It also covers how to fix the most common client-side and server-side issues and points you to resources to help resolve the obscure ones.

WSH205: WSS 3.0 COMMON ADMINISTRATION AND CONFIGURATION
MELISSA FRASER

Microsoft Windows SharePoint Services 3.0 has many new features and enhancements that can help IT professionals deploy and maintain Windows SharePoint Services solutions. Together, these new features and enhancements provide IT organizations with better control over the WSS solution and help reduce administrative overhead by allowing IT administrators to work more efficiently and effectively. In this session, we will discuss the configuration and management of WSS servers and WSS sites. Specifically we will cover: Central administration for operations; Central administration for applications; Site collection management; and Site structure and feature management.

Master the administration of Windows SharePoint Services!

SPEAKERS
MICROSOFT AND INDUSTRY EXPERTS

A Sampling of Speakers

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DEVIN GANGER
3SHARP

GUIDO GRILLENMEIER
HP

JUERGEN HASSLAUER
HP

JEFFERY HICKS
SAPIEN TECHNOLOGIES

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PRE-CONFERENCE DAY 1 • APRIL 26, 2008

9AM - 4PM • PRE-CONFERENCE WORKSHOP • EXCHANGE TRACK

SAY WHAT? VOICE TECHNOLOGIES FOR IT PROFESSIONALS (BRING YOUR OWN LAPTOP)

VALENTINE BOIARKINE, MVP
THOMAS FOREMAN, MVP

Is SIP something you do to coffee? Do you think PBX is an extreme sport? Do hunt groups make you run for cover? This session is for IT professionals who need to know more about voice technologies that work with Microsoft's Unified Communications products. Microsoft has entered the voice domain with Exchange Server 2007 Unified Messaging and Office Communications Server. As IT professionals, we need to know how to integrate these powerful products with existing voice technologies. This session will discuss voice technologies and how they integrate with UC products. You will perform a series of OCS labs developed by Wadeware® on your laptop. NOTE: The laptop you bring MUST have at least 2GB of memory, 15GB free disk space, DVD drive, and a headset with microphone.

9AM - 4PM • PRE-CONFERENCE WORKSHOP • EXCHANGE TRACK

U-FIX-IT: TROUBLESHOOTING EXCHANGE SERVER 2007 (BRING YOUR OWN LAPTOP)

PETER O'DOWD, MVP

This intensive one-day troubleshooting workshop is essential for IT and Exchange administrators who want hands-on experience troubleshooting databases, message flow, and performance in a lab environment. Exchange expert and MVP Peter O'Dowd will walk you through the process of identifying and solving problems using a wide-range of tools and techniques. On your laptop, you'll perform virtual hands-on labs developed by Wadeware® that simulate problems, and then walk through the process of troubleshooting and solving them. Attend this full-day workshop to better understand Exchange database architecture and gain knowledge necessary to recover and support your Exchange Server 2007 system. NOTE: The laptop you bring MUST have at least 2GB of memory, 15GB free disk space, and DVD drive.

PRE-CONFERENCE DAY 2 • APRIL 27, 2008

9AM - 4PM • PRE-CONFERENCE WORKSHOP • EXCHANGE TRACK

WALK IN THE PARK: OFFICE COMMUNICATIONS SERVER HANDS ON LABS (BRING YOUR OWN LAPTOP

VALENTINE BOIARKINE, MVP
THOMAS FOREMAN, MVP

Come take a six-hour guided tour of Office Communications Server (OCS) and see for yourself the latest Microsoft Unified Communications product. Much, much more than Instant Messaging, Office Communications Server provides text, web conferencing, and Voice over IP solutions that allow you to change the way your organization communicates. We'll install and configure OCS and show how web conferencing integrates with Microsoft Office. We'll show you how to configure and use Communicator Web Access, and how to configure Voice so that incoming calls are directed to Office Communicator clients (and eventually Exchange Unified Messaging if you're not there to answer). In this information-packed day, you'll use your laptop to walk through several hands-on labs developed by Wadeware® with OCS experts, MVP Thomas Foreman, and MVP Valentine Boiarkine. NOTE: The laptop you bring MUST have at least 2 gig of memory, 15GB free disk space, DVD drive, and a headset with microphone.

9AM - 4PM • PRE-CONFERENCE WORKSHOP • EXCHANGE TRACK

WALK IN THE PARK: MICROSOFT EXCHANGE 2007 HANDS-ON LABS (BRING YOUR OWN LAPTOP)

PETER O'DOWD, MVP

Come take a six-hour guided tour of Exchange Server 2007 and see for yourself the next evolution of the world's most powerful messaging system. Experience the new Management Console, the five new server roles, e-mail policy enforcement and compliance, powerful new scripting tools, new architecture, new high availability and disaster recovery features, new mailbox features, and methods for migrating from earlier versions of Exchange. In this information-packed day with Exchange expert and MVP Peter O'Dowd, you'll get hands-on experience with Exchange Server 2007 using your laptop to walk through several labs developed by Wadeware®. NOTE: The laptop you bring MUST have at least 2GB of memory, 15GB free disk space, and DVD drive.

9AM - 12PM • PRE-CONFERENCE WORKSHOP • OFFICE TRACK

SHAREPOINT GOVERNANCE: GATHER YOUR REINS BEFORE JUMPING INTO THE SADDLE

WENDY HENRY

Don't lose control of SharePoint right out of the starting gate! Before unleashing the allure of SharePoint on your unsuspecting users, make sure you have standards in mind to control content growth, authorize access, and dictate site structure. My mother always said "an ounce of prevention is worth a pound of cure" and nothing stings as bad as a well-planned SharePoint design gone horribly wrong due to lack of diligence. Attend this pre-conference session to learn what you need to know BEFORE learning what you need to know about SharePoint. Orchestrate change control so that your company gets the most out if its SharePoint investment, in the beginning and into the future!

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1PM - 4PM • PRE-CONFERENCE WORKSHOP • OFFICE TRACK

SUPPORTING SHAREPOINT DATABASES: THE DBA'S GUIDE

WENDY HENRY

The best laid plans of SharePoint admins can disintegrate in an instant...don't let this happen to you! Whether you're the DBA or the person who wants to communicate better with the DBA, learn how to protect your SharePoint configuration and content by protecting the many databases that support your SharePoint environment. From backing up to maintaining data source databases, the SharePoint Administrator's job doesn't end when SharePoint Central Administration closes. Attend this post-conference session to learn skills for maintaining SQL Server databases that house not only your SharePoint content but Business Data, Reporting Services, and Search Indexes as well. It's SharePoint...from the SQL Server point of view!

9AM - 4PM • PRE-CONFERENCE WORKSHOP • POWERSHELL TRACK

WINDOWS POWERSHELL JUMP START

JEFFERY HICKS

You know PowerShell will be a part of your future, so what are you waiting for? This HANDS-ON workshop will give you a jump start on the road to PowerShell. You will learn PowerShell fundamentals, such as navigating the shell, working with key cmdlets, securing your PowerShell environment, writing functions and filters, PowerShell scripting basics, managing the registry, using WMI and ADSI in PowerShell, and much more. Bring your laptop preloaded with PowerShell 1.0 and virtualization software that will allow you to run a Windows 2003 or later domain controller. This session will focus on PowerShell 1.0, which is the only version approved for production use. By the end of the day you'll be able to write powerful one-liners that will amaze your peers, dazzle your boss, and accomplish a ton of work with minimal effort.

9AM - 12PM • PRE-CONFERENCE WORKSHOP • VIRTUALIZATION TRACK

VIRTUALIZATION: A JUMP START

ALAN SUGANO

Virtualization is one of the hot topics this year. With significant increases in performance of the current generation of server hardware with quad-core processors, high memory capacity, and Serial Attached SCSI (SAS) drives, much of the processing power on a server goes unused. Virtualization allows you to take advantage of this processing power by running several virtualized servers on one physical host. If you're considering virtualization and are new to this technology, this workshop will get you up to speed. You'll learn about the following topics:

- Virtualization hardware; server processors, memory, and hard drive configurations; optimization of the hardware and the virtual environment for the best virtual guest performance; and running the x64 platform for virtual hosts and guests.
- Virtualization software (Virtual Server 2005, VMware Server, ESX Server).
- Backup strategies of virtual servers.
- Virtualization and high availability. Learn about the high availability solutions from Microsoft and VMware in the virtual server environment.
- Virtual guest limitations and how to determine if virtualization is a good fit for your application.

1PM - 4PM • PRE-CONFERENCE WORKSHOP • VIRTUALIZATION TRACK

VIRTUALIZING MICROSOFT SERVER APPLICATIONS

ALAN SUGANO

Virtualization is a great technology, but how does it fit in with Microsoft Server Applications? This workshop will focus on SQL Server, Exchange 2007, and WSS 3.0/MOSS 2007 in a virtual environment. Each server application has different needs in a virtual environment. For each server application we will examine the following issues:

- To Virtualize or not to Virtualize, this is the first question!
- 32- or 64-bit?
- Server configuration: Number of processors, type, memory, disk configuration, network cards, SAN type?
- What virtualization software should you use for your application?
- How do you configure guests for the best performance?
- How many users can you place on each virtual server?
- How many virtual guests can you place on a host?
- What are the High Availability Solutions for an environment?

1PM -4PM • PRE-CONFERENCE WORKSHOP • WINDOWS TRACK

GROUP POLICY ESSENTIALS: CONFIGURATION, CONTROL, AND SECURITY

JEREMY MOSKOWITZ

Group Policy is the most efficient way to manage desktops in a Windows environment. If you are still running to machines to install desktops, you are not taking full advantage of the power of Group Policy. In this practical workshop, Jeremy Moskowitz will help you gain control of your environment and get your life back. This is the perfect session to take before doing "deep dives" into the main sessions of the conference. You'll get a little bit of everything: deployment, configuration, control, and security! We'll warm up with some Group Policy basics. Then, you'll learn how to get your XP and Vista client machines up and running with some new set-up options. After your machines are up and running, Jeremy will show you how to manage your environment with templates, zap printers down to your computers, and remotely deploy software to your users' desktops. Finally, you'll learn how to use Group Policy to secure collections of machines. We'll examine how Group Policy can do the heavy lifting to the jobs you want to do! This session has both XP and Vista content. (Note: Expanded material on some sections can be seen in some of Jeremy's other talks.)

WORKSHOPS
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POST-CONFERENCE DAY • MAY 1, 2008

9AM - 4PM • POST-CONFERENCE WORKSHOP • WINDOWS TRACK

THE BDD AND BEYOND: MICROSOFT DEPLOYMENT FRAMEWORKS FOR REAL-WORLD SUCCESS

DAN HOLME

Join Windows Connections speaker chair and deployment guru Dan Holme for a deep dive into the revolutionary new tools and technologies used to deploy Windows Vista, XP, and Server 2008. Learn how to implement Microsoft Deployment (formerly known as the BDD) and real-world best practices for the design, deployment, and maintenance of Windows clients. Go way beyond what Microsoft tells you so that you can effectively support clients with applications, configuration, security patches, and service pack rollouts into the future. You will take away a deployment and systems management methodology that works and a solid understanding of its functionality so that you can further refine the methodology to apply to your enterprise. You'll learn how WinPE, WDS, and Microsoft Deployment work. You'll also get a one-of-a-kind set of tools and scripts to help you manage systems more effectively with or without SMS/SCCM. This is the best deployment training in the world, and it's only at Windows Connections.

9AM - 4PM • POST-CONFERENCE WORKSHOP • EXCHANGE TRACK

GET THE 411 ON MICROSOFT EXCHANGE UNIFIED MESSAGING (BRING YOUR OWN LAPTOP)

PETER O'DOWD, MVP

Microsoft Exchange Server 2007 Service Pack 1 extends your messaging system beyond digital data and into digital voice. This one day workshop will show you how your Exchange Server can become a unified communications system that accepts voice mail and provides users multiple ways to access it. Peter O'Dowd explain Unified Messaging as only Exchange and OCS MVP can, and then walk you through a series of hand-on labs that will demonstrate this powerful but little understood feature of Exchange Server 2007. NOTE: The laptop you bring MUST have at least 2GB of memory, 15GB free disk space, DVD drive, and a headset with microphone.

9AM - 4PM • POST-CONFERENCE WORKSHOP • EXCHANGE TRACK

HARDCORE OCS: COMPLETE UNIFIED COMMUNICATIONS TEST LAB DEVELOPMENT (BRING YOUR OWN TWO LAPTOPS)

THOMAS FOREMAN, MVP
VALENTINE BOIARKINE, MVP

Not for the faint of heart, in this one-day workshop you will build a complete Unified Communications test lab that will reveal how OCS and Exchange with Unified Messaging will work in your environment. You will bring two laptops and build a lab that includes a SIP gateway, integrated with both OCS and Exchange, which lets you place a call inbound to an Office Communicator client and leave a voice message using Exchange Unified Communications. Take this configuration back to your own test lab to see how OCS and Exchange Server 2007 will function in your unique lab environment. NOTE: The laptops you bring MUST have at least 2GB of memory, 15GB free disk space, and DVD drive, NIC, and headset with microphone.

9AM - 4PM • POST-CONFERENCE WORKSHOP • VIRTUALIZATION TRACK

VIRTUALIZATION HANDS ON BOOT CAMP

RICK WATSON

Bring your laptop to this incredible one-day session. You will be equipped to quickly take advantage of the free virtualization capabilities of VMware Server and introduce concepts of VMware Virtual Infrastructure (ESX Server based) virtualization. The course will also help you avoid some of the most common mistakes made by those new to virtualization. You will learn to: install and configure VMware Server; install and configure virtual machines; configure a Windows 2003 host for remote administration via the Web interface; and understand VMware Virtual Infrastructure (ESX Server based) virtualization.

Who Should Attend? System administrators, server operators, software developers and testers, and anyone else exploring server virtualization for the first time.

Prerequisites: System administration experience on Microsoft Windows servers.

Requirements: A laptop with at least 1GB of RAM. More detailed requirements will be available in early 2008.

Highlights: downloading VMware Server; installing VMware Server; installation considerations; creating a Virtual Machine (VM); choosing the right VM settings; virtual disk, networking, and administrative options; changing, adding, and removing virtual hardware; installing the guest OS and VMware Tools; Remote Management Options and Tools; configuring Windows 2003 IIS for remote access; and VMware Virtual Infrastructure (ESX Server based) virtualization.

9AM - 12PM • POST-CONFERENCE WORKSHOP • OFFICE TRACK

WSS 3.0 IMPLEMENTING CUSTOM WORKFLOWS

MELISSA FRASER

Long gone are the days of the interoffice envelope. A major feature of WSS 3.0 is the ability to route content through a business process. These processes are represented by using workflows. A workflow is a natural way to organize and run a set of work units, or activities, to form an executable representation of a work process. The workflow functionality in Windows SharePoint Services 3.0 is built on the Windows Workflow Foundation (WF), a Microsoft Windows platform component that provides a programming infrastructure and tools for development and execution of workflow-based applications. In this session, we will build a custom workflow end-to-end. We will discuss:

- Planning the workflow
- Creating the workflow steps
- Workflow testing
- Workflow deployment

1PM - 4PM • POST-CONFERENCE WORKSHOP • OFFICE TRACK

MONITORING AND OPTIMIZING SHAREPOINT INDEXES AND SEARCH

WENDY HENRY

How do you make sure your Microsoft Office SharePoint Server investment pay off? By making sure your knowledge workers use it! Be certain your users can find the relevant information they need by providing them the most effective Search environment to increase their productivity. Both beginners and experts alike will benefit from learning how to optimize index performance in order to improve Search result click-through statistics, how to use native Search reporting to determine workload thresholds in order to plan for additional indexing servers, and how to utilize the many Search Web Parts included with MOSS to enhance the user Search interface. Attend this pre-conference session for a look at SharePoint Search as you've never seen it before, from the index out!

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❑ 9:00AM - 4:00PM Say What? Voice Technologies for IT Professionals BOIARKINE & FOREMAN ....$399 _____
❑ 9:00AM - 4:00PM U-Fix-It: Troubleshooting Exchange Server 2007 O'DOWD....$399 _____

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❑ 9:00AM - 4:00PM Walk in the Park: Microsoft Exchange 2007 O'DOWD ....$399 _____
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❑ 9:00AM - 12:00PM SharePoint Governance: Gather Your Reins BEFORE Jumping ... HENRY ....$199 _____
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❑ 1:00PM - 4:00PM Supporting SharePoint Databases: The DBA's Guide HENRY ....$199 _____

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❑ 9:00AM - 12:00PM WSS 3.0 Implementing Custom Workflows FRASER ....$199 _____
❑ 1:00PM - 4:00PM Monitoring and Optimizing SharePoint Indexes and Search HENRY ....$199 _____
❑ 9:00AM - 4:00PM Get the 411 on Microsoft Exchange Unified Messaging O'DOWD ....$399 _____
❑ 9:00AM - 4:00PM Hardcore OCS: Complete Unified Communications Test Lab ... FOREMAN & BOIARKINE....$999 _____
❑ 9:00AM - 4:00PM Virtualization Hands On Boot Camp WATSON....$399 _____

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Vista and Server 2008 Malware Protection Gems

Use DEP and ASLR to protect yourself against buffer-overrun–based attacks

Attacks based on buffer overruns (aka buffer overflows) have been a problem for a long time and are still considered one of the computer industry's most important security problems. The first buffer-overrun–based attack distributed via the Internet, the Morris worm, did a lot of harm in 1988. The sad thing is that the creators of the Morris worm didn't write the worm to cause harm but rather as an experiment for measuring the size of the Internet. The Morris worm exploited weak passwords and known vulnerabilities in UNIX programs such as sendmail and Finger. Two recent well-known attacks that involved exploiting buffer overruns, the Code Red and SQL Slammer worms, exposed many Internet-connected systems to attackers' control. In 2001, the Code Red worm exploited a buffer-overrun vulnerability in Microsoft Internet Information Services (IIS) 5.0 (the IIS version that is bundled with Windows 2000), and in 2003, the SQL Slammer worm used a buffer-overrun vulnerability to compromise machines running Microsoft SQL Server 2000.

You can defend against buffer-overrun–based attacks by using defenses that Microsoft includes in Windows Vista and Windows Server 2008: Data Execution Prevention (DEP) and Address Space Layout Randomization (ASLR). (At the time of this writing, Microsoft was about to release Vista SP1 and had released Windows Server 2008 RC0.) I'll explain why these defenses are important and how you can configure them and observe their behavior.

Understanding Buffer Overruns

Before going into more detail on the Vista and Server 2008 buffer-overrun defenses, it might be worthwhile to look at how a buffer overrun works and how it can harm your systems and data.

A buffer overrun occurs when a malicious or badly engineered program stores data beyond the boundaries of a fixed-length buffer in computer memory. The result is that the extra "overflowing" data overwrites adjacent memory locations. The data that's overwritten can include other buffers, variables, and program logic and may cause a process to crash or produce incorrect results. An even bigger threat is that the injected data often includes executable code that the program under attack is then lured to execute. This executable code often contains the real payload of a buffer-overrun–based attack. It's used to steal or delete data, create Denial of Service (DoS)–based service outages, trigger privilege elevations, or spread malware to other systems.

Figure 1: Simple buffer overflow example

Figure 1 gives a simple example of a buffer overrun. A program has defined two variables that are stored in adjacent memory locations. The first variable is an eight-byte-long string called X; the second, a two-byte integer called Y. Initially, X contains nothing but zero bytes, and Y contains the number 30. Imagine that a user (whether unintentionally or maliciously) inputs a character string OVERFLOW to this program. The program then attempts to store this character string in X's memory location followed by a 0 value to mark the end of the string. The program logic doesn't check the length of the string and partially overwrites the value of Y. The result is that, although the programmer didn't intend to change the value of Y when variable X receives input, variable Y's original value 30 is now replaced by the number that's part of the character string that was injected into the variable X memory location.

Developers can prevent buffer overruns by including sufficient boundary checks in their program code and by leveraging compilers or runtime services that perform boundary checks. Boundary checks ensure that input data are of the right length. Although boundary checking and enforcement have become best practices for developers, plenty of legacy code doesn't include boundary checks. Also, coding best practices are worthless if some programmers don't follow them.

These reasons explain why many hardware, application, and OS software vendors including Microsoft have developed proactive defenses that attempt to stop buffer-overrun attacks in badly engineered code. Let's look at Microsoft's implementations of DEP and ASLR.

Data Execution Protection

As I mentioned above, buffer-overrun–based attacks often write executable malicious code to another program's memory buffers and then trick the program into executing the malicious payload. You can tackle the execution of maliciously injected code by using DEP. DEP lets Windows mark memory

Jan De Clercq
(jan.declercq@hp.com) is a member of HP's Security Office and focuses on identity management and security in Microsoft products. He is coauthor of *Microsoft Windows Security Fundamentals* (Digital Press).

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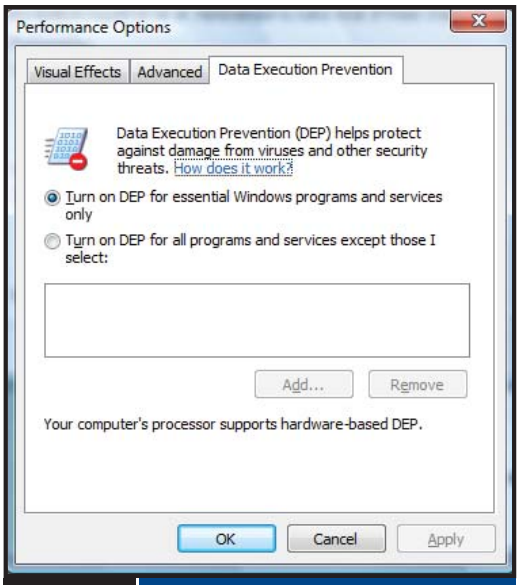

Figure 2: DEP configuration

locations that should only contain data as non-executable (NX). When an application attempts to execute code from NX-marked memory locations, Windows' DEP logic will block the application from doing so.

A negative side effect of the buffer-overrun protection offered by DEP is that the blocked application will typically halt. In other words, even though DEP stops malware from executing its malicious payload, this situation creates a new opportunity for malware to launch DoS attacks.

Microsoft includes DEP support not only in Vista and Server 2008, but also in Windows XP SP2, Windows Server 2003 SP1, Windows 2003 R2. Microsoft DEP implementation comes in two flavors: hardware-enforced DEP and software-enforced DEP.

Hardware-enforced DEP. Hardware-enforced DEP leverages a processor feature that AMD refers to as the no-execute page-protection (NX) feature and that Intel refers to as the Execute Disable Bit (XD) feature. At the time of writing, AMD supported NX only on its 64-bit processors, and Intel supported XD only on the Itanium and EM64T 64-bit processors and a small number of 32-bit Prescott processors. Microsoft is not the only OS vendor that leverages the NX and XD processor features for stopping buffer overruns: NX- and XD-enabled software is also available in other OSs such as Linux and UNIX BSD (see en.wikipedia.org/wiki/Nx-bit for more information).

Software-enforced DEP. Software-enforced DEP lets Microsoft provide DEP on 32-bit processor systems not equipped with an NX- or XD-compatible processor. In this software workaround, the processor-level NX- or XD-bit functionality is provided by a set of special pointers that the Windows OS automatically adds to data objects stored in the system memory.

You can easily check whether your system supports hardware- or software-enforced DEP by checking the DEP configuration settings. You can access these settings using the Advanced Settings option in the System Control Panel applet and navigating to the Advanced and Performance Settings options.

At the bottom of the DEP configuration settings screen, there's a reference to the type of DEP your system supports. Figure 2 shows the DEP configuration settings on a Vista system. (I'll explain the other configuration options later in this section) The bottom line reads, "Your computer's processor supports hardware-based DEP."

If your system supports software-enforced DEP (meaning that your machine doesn't have the NX- or XD-compatible processor), you'll see "Your computer's processor does not support hardware-based DEP. However, Windows can use DEP software to help prevent some types of attacks."

An alternative way to check whether your system supports hardware- or software-enforced DEP is by using Windows Management Instrumentation (WMI) commands. The procedure is outlined in the Microsoft article at support.microsoft.com/kb/912923.

On XP SP2, Windows 2003 SP1, and later Microsoft OSs, DEP is enabled by default. However, DEP doesn't always protect all programs running on your system. The exact list of programs that are protected by DEP is defined by DEP's protection level. DEP supports two protection levels:

- Level 1—The first level protects only the Windows system code and executables and doesn't offer DEP protection for additional Microsoft or third-party applications that run on your system.
- Level 2—The second level protects all executable code that runs on your system; it offers DEP protection for both Windows system code and the Microsoft or third-party applications that run on your system.

By default, XP SP2 and Vista run DEP at protection level 1; Windows 2003 SP1 and Server 2008 run DEP at protection level 2.

Administrators can configure the DEP protection levels from the DEP configuration screen, which you can see in Figure 2. In this example (which shows the default DEP configuration settings on a Vista system), DEP is enabled for essential Windows programs and services only—DEP protection level 1. You can use the other radio button *Turn on DEP for all programs and services except those I select* to switch to DEP protection level 2, which is the default setting on Windows 2003 SP1 and Server 2008.

Protection level 2 lets you exempt certain applications from DEP protection. This ability to exempt apps is important because some legacy applications don't run properly when DEP is enabled—for example, at the

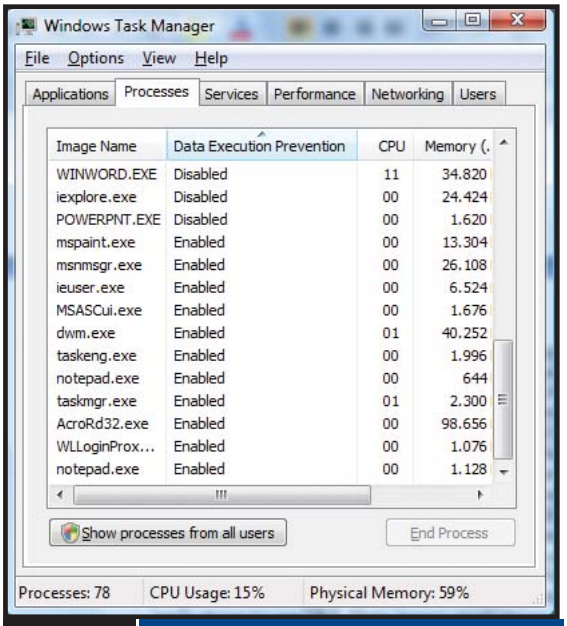

Figure 3: Checking DEP status of a process from the Task Manager

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Microsoft

Table 1: Boot.ini NoExecute= values and Their Meaning

/NoExecute= values	Meaning
AlwaysOn	DEP always turned on for all services and applications – grays out the DEP configuration screen (see figure 2) in the system properties
AlwaysOff	Completely turns off DEP
OptIn	Turns DEP on and sets it to protection level 1
OptOut	Turns DEP on and sets it to protection level 2

time of writing, Microsoft Word was still automatically exempted from DEP. Before switching your DEP protection to level 2, you must run an application compatibility test to ensure that all applications run properly when DEP is enabled. To exempt one of your applications from DEP, you can add the application's executable to the excluded list in the DEP configuration screen using the Add… button.

You can easily check whether a given application is protected by DEP by checking the DEP column of the application's process in the Windows Task Manager, which Figure 3, page 66, shows. If you don't see the DEP column on your system, you can add it using the Task Manager's View\Select Columns… option.

Another way to exempt one of your applications from DEP is to create a software fix to distribute to your systems that automatically disables DEP for a given application on those systems. Microsoft refers to such a software fix as a DisableNX shim. To create this software fix, see the Microsoft Application Compatibility Toolkit (ACT), which also includes a tool called Compatibility Administrator that can help (technet.microsoft.com/en-us/windowsvista/aa905078.aspx).

Application developers can also do the opposite—directly enable their applications for DEP support in their application binaries. To do so, they use the /NXCompat compilation switch.

One important final note is that when DEP is running in protection level 2, your system will run a bit slower because of all the extra DEP checks that are carried out on the processor and system memory level. That's why for test systems that aren't exposed to the Internet, for example, you can consider turning off DEP protection completely. The only way to turn off DEP completely on a given system is to specify the /NoExecute=AlwaysOff switch in the system's boot.ini file.

Note that you can also use the same boot.ini /NoExecute= switch with other values to turn DEP on and to set the DEP protection level. Table 1 shows all the /NoExecute values.

The boot.ini file is available only on XP and Windows 2003, and you can edit it using Notepad or going to the *Startup and Recovery* section in System properties.

On Vista and Server 2008, the boot.ini has been replaced by the Boot Configuration Data (BCD) file. To edit the BCD file, Microsoft provides a command-line utility called bcdedit.exe.

When you run bcdedit without switches, it shows your current boot configuration. Figure 4 shows the result of running bcdedit on a Vista system. Note the last line that holds the nx configuration OptIn. To change the nx configuration to alwaysoff, you would run the following bcdedit command:

```
bcdedit /set nx alwaysoff
```

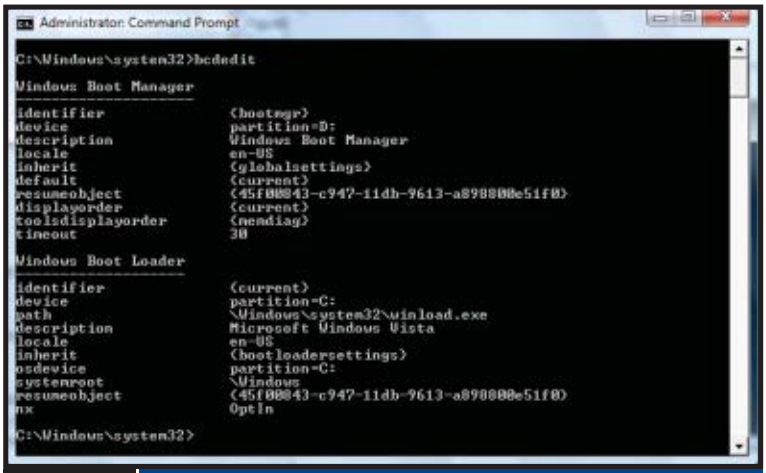

Figure 4: Running bcdedit on a Vista System

The values specified in Table 1 for the boot.ini /NoExecute= switch are also available for the BCD nx option.

For more information about Microsoft DEP and how to configure it, consult the Microsoft article at support.microsoft.com/kb/875352/en-us.

Address Space Layout Randomization

Another technique often used by buffer-overrun–based malware is to inject a system memory path that points to the location of an important system DLL into another program's buffer. The malware then tricks the program into calling that particular system file to let the malware leverage the system DLL's services without being detected.

This type of buffer-overrun attack is relatively easy to carry out if the OS always loads certain system DLLs on the exact same memory location. On XP, for example, the memory locations of system DLLs are always identical— they vary only slightly depending on the service pack status of the system. The new Vista and Server 2008 ASLR feature makes it harder for malware to leverage a system DLL's services by randomizing DLL's memory location. Unlike DEP, ASLR isn't available on earlier Windows versions.

Each time a Vista and Server 2008 system reboots, ASLR randomly assigns system code (basically system DLLs and executables) to different memory locations. This means that the system code's entry points (the addresses the malware would use to call on the service of a particular piece of system code) are in unpredictable locations. In Vista and Server 2008, a DLL or executable can be loaded into any of 256 locations. This means that an attacker has a 1/256 chance of getting the address right. As such, ASLR also makes it harder for hackers to write repeatable code such as worms that target identical system resources on many different systems.

You can observe the effect of ASLR by using the SysInternals Process Explorer tool, which you can download at www.microsoft.com/technet/sysinternals/utilities/

processexplorer.mspx. To use the tool, start Process Explorer and ensure that you have selected the Show Lower Pane option in the View menu.

Then select the explorer.exe process in the upper pane and check the base address of the ntdll.dll in the base column in the lower pane. (If you don't see the base column you can add it by using the View / Select Columns... menu option—the Base column can be added from the DLL tab.)

Write down the base address, then reboot your system. On an XP system, the base address for ntdll.dll remains identical after a system reboot (XP doesn't support ASLR). On a Vista system, the base address is different after a system reboot (because Vista supports ASLR).

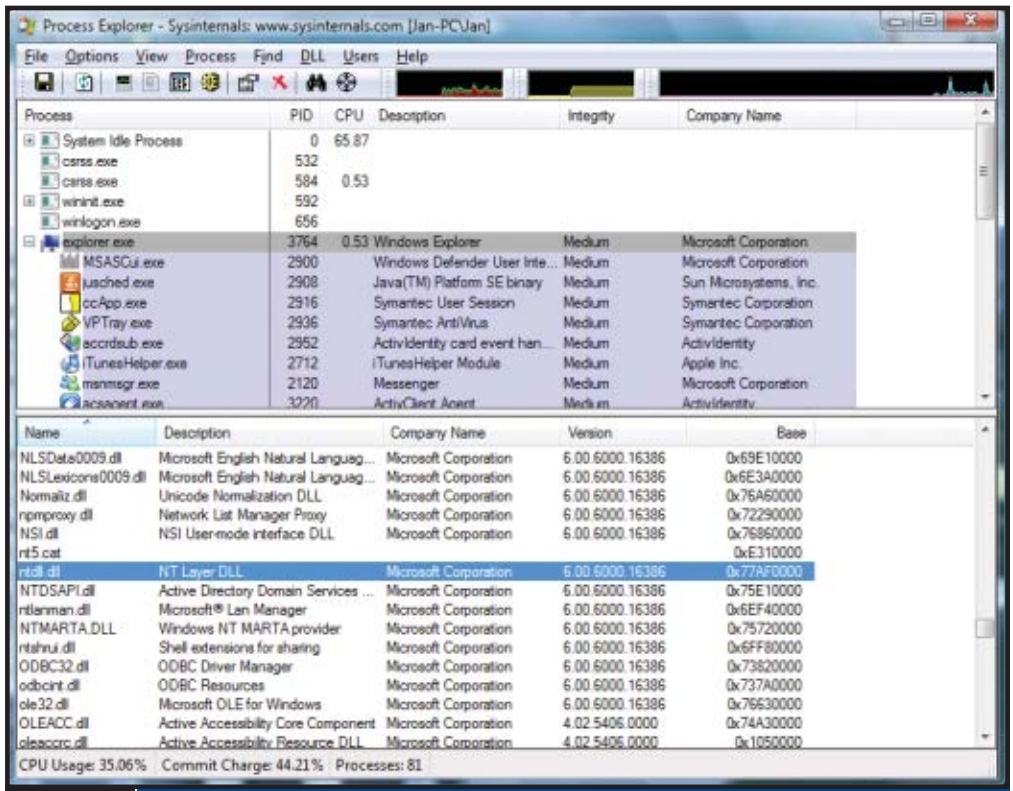

Figure 5: Observing the effect of ASLR with SysInternals Process Explorer

Figure 5 shows the Process Explorer interface and the base address for the ntdll.dll DLL. Table 2 shows the base addresses I found for the ntdll.dll and user32.dll DLLs when running Process Explorer on an XP SP2 system and on a Vista system.

You can leverage ASLR not only for randomizing the memory locations of Windows system files but also for randomizing the memory locations of executables and DLLs of any application that runs on Vista or Server 2008. To do so, application developers must compile their code with the /dynamicbase linker option. Microsoft Visual Studio supports this option from Visual Studio 2005 SP 1 and later.

Like DEP, ASLR is not a Microsoft-only invention and implementation. ASLR was implemented long before Vista and Server 2008, on platforms such as Linux and UNIX. Also certain Host Intrusion Detection System (HIDS) solutions have been supporting ASLR on legacy Windows platforms long before the native Windows support.

A good analysis of the Microsoft ASLR implementation in Vista is offered in the Symantec research paper at www.symantec.com/avcenter/reference/Address_Space_Layout_Randomization.pdf. Unlike with DEP, Microsoft doesn't offer ASLR-specific configuration settings for fine-tuning the use of ASLR.

Important Proactive Defenses

DEP and ASLR each use a slightly different proactive defense approach as a buffer-overrun defense. Where ASLR makes it more difficult for malware to find the right code, DEP makes it more difficult for malware to execute the code once the target code is found. You can leverage both techniques at the same time and they can also be leveraged in virtual computing environments such as Microsoft Virtual PC or VMware products.

From an application-support point of view, you should remember that you must test your applications for DEP compatibility prior to deploying them on a DEP-enabled Windows platform. DEP can cause certain applications to stop working properly or even halt.

Finally, it's important to understand that DEP and ASLR aren't a panacea for the buffer-overrun problem. Both techniques certainly make it much more difficult for malware to leverage buffer overruns. ASLR, for example, doesn't make it impossible for malware to find system code, but it makes the process of finding system code much more challenging. In many cases, ASLR and DEP will also effectively stop buffer-overrun–based attacks.

Table 2: Effect of ASLR on DLL Base Addresses

DLL	Windows XP SP2 base address No ASLR	Windows XP SP2 base address (after reboot) No ASLR	Windows Vista base address With ASLR	Windows Vista base address (after reboot) With ASLR
Ntdll.dll	0x7C900000	0x7C900000	0x77AF0000	0x776B0000
User32.dll	0x7E4I0000	0x7E4I0000	0x76880000	0x76520000

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Getting to Know Office 2007

Answers to your questions about the Microsoft Office 2007 system

by Dan Holme

Q: I reinstalled Microsoft Office Outlook 2007 and I no longer see names "autofilling" when I type them in the To field of an email message. What's up?

A: The feature you're asking about is called AutoComplete. It proposes names as you type in the To, Cc, and Bcc fields of email messages, meeting requests, assigned tasks, and share requests, as well as in the email field of contacts.

A common misconception about this feature is that it "pulls" names from your contacts. It should pull names—but it doesn't. Microsoft, are you listening? Hello—Office 14 feature request!

What it does do is suggest names based on email addresses you have typed before, whether those names are in your address book or not. If you reinstall Outlook, you lose that history (although upgrading preserves it). Here are a couple pointers about using AutoComplete:

- If a name appears in the AutoComplete list that you don't want to appear, scroll down to it and press Delete. This helps to prevent you from accidentally sending an email message to someone you emailed once before.
- The AutoComplete list is stored in a file named Outlook_profile_name.nck. So, for example, if my Outlook profile name is Dan, my AutoComplete list is dan.nk2. You can find the list stored in the Outlook folder in the local settings folder of your user profile, which is %userprofile%\AppData\Local\Microsoft\Outlook on Windows Vista and %userprofile%\Local Settings\Application Data\Microsoft\Outlook on Windows XP. You simply copy and paste this file to transfer it between systems. You can rename the file if the profile name has changed (e.g., rename Dan.nk2 as DanHolme.nk2). Logically, this file ought to be in the roaming portion of your user profile, though it's not.

Q: I have a SharePoint site with forms-based authentication. When I try to do <*fill in the blank*> using an Office application, it doesn't connect correctly. How can I make it work?

A: I'm asked variations of this question frequently, hence <*fill in the blank*>. It could be that you're trying to open a library in Windows Explorer, connect to a SharePoint site with Microsoft Office SharePoint Designer 2007, export to Microsoft Excel, connect to a list with Microsoft Access, or complete another task. Whatever it is you're trying to do, when you use forms-based authentication, you must select the *Sign me in automatically* checkbox, and Microsoft Internet Explorer (IE) must remain open. Your Office application (i.e., SharePoint, Access, Excel) will ride on the authentication you've created.

Technically, what happens is that your forms-based authentication creates a persistent cookie, which client applications can use. If you don't select *Sign me in automatically*, or if

Got Questions About Microsoft Office?

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persistent cookies aren't allowed in your environment, client integration will fail.

Here are two other important tips regarding forms-based authentication:

- The persistent cookie expires. So "sign me in automatically" is a bit of a misnomer—by default, it signs you in for 30 minutes. To change the timeout value, you must change or add a timeout attribute with a timeout value expressed in minutes. You add this to the forms element in the Web.config file for the application. For example, to change the timeout to two hours, type

```
<forms loginUrl="login.aspx"
   name=".ASPXFORMSAUTH"
   timeout="120" />
```

where "*120*" is the timeout value of two hours, expressed in minutes. (The previous entry wraps to several lines because of space constraints here; you should type it on one line in the file.)

- You must have client integration enabled for the SharePoint application. In SharePoint Central Administration, open the settings for the application's authentication provider and select Yes in the *Enable client integration* section.

Q: How can I remove duplicates from an Excel database?

A: Luckily, Microsoft Office Excel 2007 made it significantly easier to remove duplicates from a database. Simply select any cell in your data table and click the Remove Duplicates button on the Data tab of the Ribbon. You'll be prompted to choose the columns to analyze for duplicates. If two or more rows contain the exact same data in the selected column or columns, the duplicate rows will be deleted, leaving only one row with that data. Easy, huh?

Keep in mind that Excel can open many common data file formats, such as .csv and .txt files, for delimited data. So if you have duplicate data in another application that doesn't support duplicate purging, you can export to Excel, remove duplicates in Excel, then export back to the original database.

Q: Where are SharePoint documents stored on the server? What are the options for backing up and restoring SharePoint documents?

A: All SharePoint content is stored in a Microsoft SQL Server database. There are several options for backup and restore that enable SharePoint to support document storage more effectively than traditional file shares.

Recycle Bin. Users have access to items (to which they have permissions) in the Recycle Bin for the site. If they delete something, they can restore it right away. You configure Recycle Bin settings for the site's Web application through Central Administration, where you specify the Recycle Bin's size and how long an item will remain in the site Recycle Bin before being removed.

Second-stage Recycle Bin. Windows SharePoint Services 3.0 and Microsoft Office SharePoint Server 2007 have a second-stage Recycle Bin at the site-collection level. When an item is removed from a site's Recycle Bin based on the time configuration mentioned previously, the item is placed in the second-stage Recycle Bin. An administrator can recover items from there by navigating to the Site Settings for the top-level site in the site collection and clicking the Recycle Bin link. The size of this Recycle Bin is configured, also in the Web application settings, as a percentage of the size of a site's Recycle Bin. If the second-stage Recycle Bin fills, the items placed in the Recycle Bin first are removed to make room for new items.

Versioning. SharePoint Server 2007 lets you view the version history of an item or file. This is useful when users damage files without actually deleting them, such as erasing a file's contents or overwriting a good file with a bad file of the same name. If your document library has versioning enabled, you can simply go to the document's Version History and recover the "good" version.

Content database. Each Windows SharePoint Services site collection is stored in a content database, which is the actual SQL Server database. The content database can be recovered in the event of corruption by using transaction logs, or it can be restored using either SQL Server recovery methods or the restore functionality within SharePoint Central Administration. Of course, that assumes you have a good backup plan for your SharePoint databases, which is paramount.

Third-party add-ons. Third-party ISVs offer item-level recovery solutions, which enable SharePoint administrators to restore granular items from backup. Tools include Quest Software's Recovery Manager for SharePoint, AvePoint's DocAve, and IBM's Tivoli Storage Manager for Microsoft SharePoint.

Q: When I travel to another time zone and look at Calendar in Microsoft Outlook Web Access (OWA) in Exchange Server 2003, it shifts all my appointments to match the time zone I traveled to. How can I see my appointments in my "home" time zone?

A: Good question! In OWA, in Options, there's a time zone setting, Current Time Zone, which Figure 1 shows. Changing it, though, doesn't change the time in which appointments are displayed. In fact, I can't see what this setting does change. Instead, as you experienced, OWA uses the time zone on the client (the Windows time zone) to display calendar items.

However, if you use the basic OWA client (instead of logging on to the premium client) this setting does work. OWA 2007 in Exchange Server 2007 seems to have solved the problem, and your calendar entries should reflect the time zone option that you configured.

InstantDoc ID 96106

Dan Holme
(danh@intelliem.com) is director of consulting at Intelliem, which delivers solutions-focused training and consulting services supporting enterprise SharePoint, Office, Windows, and Active Directory implementations.

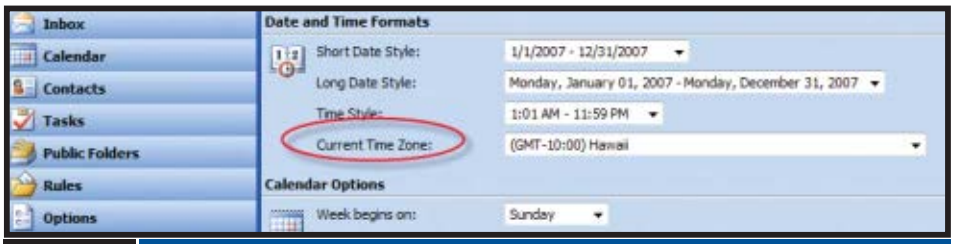

Figure 1: The Current Time Zone setting in Outlook Web Access

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Q: What's new in Windows Live OneCare 2.0?

A: Live OneCare 2.0 introduces welcome support for the 64-bit versions of Windows Vista and Windows XP. This version also adds more PC health and maintenance functionality, including:

- The ability to specify a hub PC and manage other PCs centrally via a common Live ID
- Wi-Fi connection security assistance for providing a protected wireless experience
- The ability to back up photos and other information to online resources
- Printer sharing support
- System startup optimizer
- Proactive fix and recommendation advice to keep PCs healthy
- Monthly reports of usage on as many as three PCs on the same home network

InstantDoc ID 97940

—John Savill

Q: What's the Microsoft Update Catalog 7.0?

A: Microsoft has released a new version of its catalog Web site, which lists updates, drivers, and hotfixes that you can download from update.microsoft.com for local installation. The catalog is available at catalog.update.microsoft.com/v7/site/Home.aspx.

To use the site, enter a term in the search box on the main page (e.g., vista 64-bit driver) and click Search. A list of all matching updates will be displayed. Click Add next to each update you want to download, which adds the update to the update basket.

You can perform multiple searches and add more updates to the basket. After all the desired updates are in the basket, click the view basket link under the search box, which displays all the updates in the update basket, as Figure 1 shows.

Click the Download button, and you'll be prompted to confirm a folder to which to download the updates, then click Continue. After the download is complete, click Close in the download window.

Each update is placed in a separate subfolder in the destination folder, and each subfolder has the same name as the update title. You can then manually install the updates by double-clicking them, or you can inject them into a Windows Imaging Format (WIM) file.

InstantDoc ID 97939

—John Savill

Q: How do I give people permission to add or remove themselves but not others from a distribution group?

A: The Self security principle is a useful tool for working with groups. Open the Active Directory Users and Computers Microsoft Management Console (MMC) snap-in and enable Advanced Features (View, Advanced Features). On the Security tab, select the Self principal and click *Add/Remove self as member,* which will allow users to add and remove themselves from the group but not affect anyone else.

InstantDoc ID 97942

—John Savill

Q: How can I clear the Microsoft Office Outlook auto-complete address cache?

A: Outlook has an auto-complete cache to help fill in recipient information when adding recipients. If you want to delete this auto-fill cache, you can delete individual items or the entire cache. You remove individual items by typing an address on the To line of an email, and when the auto-fill suggestion is displayed, press the Delete key. To delete the entire cache, stop Outlook, navigate to the %APPDATA%\Microsoft\Outlook folder (type this in Explorer address bar), and delete the Outlook.NK2 file. Restart Outlook.

InstantDoc ID 97941

—John Savill

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At a Glance

Keeping your system secure with Live OneCare 2.0 75
Learning about Microsoft Update Catalog 7.0 75
Clearing the Outlook auto-complete address cache 75
Granting users permission to add/remove themselves from a distribution group 75

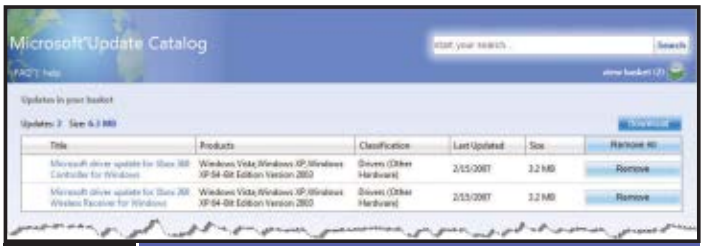

Figure 1: Viewing the Update Catalog basket

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Decommission Old Computers with Cipher

Encryption isn't the tool's only capability

Mark Minasi (www.minasi.com/gethelp) is a senior contributing editor for *Windows IT Pro*, an MCSE, and the author of 25 books, including *Administering Windows Vista Security: The Big Surprises* (Sybex). He writes and speaks around the world about Windows networking.

For the past two months, we've been tinkering with Cipher (cipher.exe), the Windows command-line tool for controlling Encrypting File System (EFS). The bulk of EFS's job is to encrypt data files and manage the keys it uses for that encryption, as I demonstrated with the previous two column's looks at the tool's /e, /d, /r, and other options. But Cipher offers other cool functionality, not least of which is its ability—with its /w option—to simplify the decommissioning of old systems.

Disk Decommissioning

What do you do with old computers—sell them or donate them to a charity? The answer to that question is important because those old systems probably contain one or more hard disks that contain all sorts of confidential information. I always wince when I see someone selling an old laptop or desktop computer because I'm almost certain the seller hasn't removed his or her personal data from the system's hard disk. Perhaps the seller has formatted the disk, but there are so many tools on the market for restoring data from formatted disks that I wonder how many people have been embarrassed after selling a computer. A few times, I've purchased used computers and discovered personal-finance files, old email messages—you name it, all recovered without any genius.

So, before letting go of a computer, you need to ensure that its data won't fall into the wrong hands. One solution is to get rid of the computer but keep the hard disk, but then we're back to the question, "How do I get rid of the data on the disk?" Some people use old hard disks for target practice, which is fine if you live near a rifle range. I've seen an amazing US Army machine that *shreds* hard disks, but unfortunately I can't afford a toy like that. The best solution is to overwrite every sector on the disk with random patterns, and—according to some—repeat that several times. One erasure might not entirely overwrite a magnetic area. (Having said that, I'm not aware of an off-the-shelf hardware or software solution that can reliably read a hard disk that's been overwritten once.)

Cipher's Solution

Cipher offers a method for erasing a hard disk so that you can feel fairly secure that none but the most technologically savvy bad guys can get to its erstwhile data. You perform the process in two steps. First, format the target disk. The easiest format procedure is probably to put the disk in a USB-compatible external hard-drive enclosure, then connect it to your new computer. Then, once you've emptied the disk, open a command prompt (I'm assuming your new computer is running at least Windows XP) and type

```
cipher /w:<d:>
```

where *d:* is the drive letter of the disk you're decommissioning. Cipher /w will overwrite all unused sectors on the disk with zeroes, then ones, and finally a random number. The key to understanding the process is the phrase "unused sectors." If you don't first format the disk, Cipher won't touch the sectors that contain your data!

You might be wondering why you need to go through the whole process of connecting the soon-to-be-decommissioned drive to a working system rather than, say, booting Windows Preinstallation Environment (PE) and running Cipher from Vista. I tried that latter solution with no success. Apparently, Windows PE lacks the suite of cryptographic support routines that Vista contains. Oh, and don't expect to get Cipher's overwrite process done quickly. In my experience, Cipher requires a minute or two per gigabyte. Start the encryption at night, and your disk will be clean as a whistle by the time you wake.

> I've purchased used computers and discovered personal-finance files, old email messages—you name it.

Don't Worry

On a final note, let me save you some time and aggravation. When you make it known that you plan to use Cipher /w to decommission a drive, someone—inevitably a security guy—will no doubt claim that overwriting a drive a mere three times is insufficient to truly protect that drive from a determined hacker. Now, I freely admit to being a card-carrying security guy, but some of my compatriots seem more interested in worrying people than truly analyzing a security situation. Could the NSA or CIA retrieve data that has been overwritten only three times? Yes, those agencies probably could. But as long as you're not a member of Al Qaeda, you can surely rest easy after accomplishing a "mere" three overwrites.

InstantDoc ID 97933

Did You Know?

You can meet Mark Minasi at the upcoming Windows Connections 2008 conference in Orlando, Florida, April 27-30. For more information, visit www.winconnections.com.

Free Virtualization Utilities

These tools will help you develop and manage your virtual environments

With virtualization technology making deep inroads into almost every aspect of IT, assembling your virtualization toolkit can really help you be prepared to deal with the wide variety of situations that you're likely to encounter. For instance, what do you do if you want to convert a virtual machine (VM) from Microsoft Virtual Server 2005 R2 to VMware? Or what if you've created a Microsoft Virtual Hard Disk (VHD) image, but it's run out of space and needs to be expanded? I've come up with a list of some of my favorite free virtualization tools for working with Microsoft or VMware VMs that can solve these problems and more.

10 **Ultimate-P2V**—Converting physical systems to VMs is one of the most common virtualization tasks. The Ultimate-P2V utility is essentially a plug-in for BartPE that creates new boot VM images by ghosting the physical image and then injecting drivers into a VMware VM image. This utility is far simpler to use than a tool such as Microsoft Virtual Server Migration Toolkit (VSMT), but it requires another third-party tool—Symantec Ghost or Acronis True Image, for instance—to create the disk image. You can find Ultimate-P2V at www.rtfm-ed.co.uk/?page_id=174.

9 **Virtual Floppy Drive**—Virtual Floppy Drive is another helpful tool; it lets you mount a virtual floppy drive from a VM. Creating a set of virtual floppy drives can be handy for loading storage drivers and other software for your VMs. Virtual Floppy Drive can be found at chitchat.at.infoseek.co.jp/vmware/vfd.html.

8 **ISO Recorder**—ISO Recorder is my favorite free utility for working with ISO images, and ISO images are really handy for installing the OS and other software on a VM. ISO Recorder integrates into Windows Explorer's context menu, and it lets you create ISO images and burn ISO images to CD-ROM or DVD. You can download ISO Recorder from isorecorder.alexfeinman.com/isorecorder.htm.

7 **VMware Converter**—This is my favorite conversion tool for VMware. VMware Converter is an easy-to-use, wizard-based tool that can convert either physical machines or Microsoft VMs to VMware VMs. VMware Converter works with Windows Server 2003 (32-bit and 64-bit), Windows XP (32-bit and 64-bit), Windows 2000, and Windows NT 4 (SP4 or later). You can download VMware Converter from www.vmware.com/products/converter.

6 **VMDK to VHD Converter**—If you're looking for a tool that can convert the other way—from VMware to Microsoft images—then you'll want to check out vmToolkit's VMDK to VHD Converter. Because most free tools seem oriented toward making VMware images, this is a welcome addition if you need to deal with both VMware and Microsoft VMs. You'll find the VMDK to VHD converter at vmtoolkit.com/files/folders/converters/entry8.aspx.

5 **VMware Workstation 5.5 Disk Mount Utility**—This utility lets you mount a VMware virtual hard disk file (.vmdk) on a Windows host. The virtual hard disk file is mounted as a drive, and you can read from and write to the .vmdk file. You can get VMware Workstation 5.5 Disk Mount Utility from www.vmware.com/download/eula/diskmount_ws_v55.html.

4 **Virtual Server 2005 R2 SP1's VHDMount**—VHDMount is Microsoft's answer to VMware's Disk Mount Utility. VHDMount is a command-line tool that lets you mount a VHD file (.vhd) as a local drive. VHDMount is included as part of Microsoft Virtual Server 2005 R2 SP1 (which is itself free).

3 **VHD Resizer**—Expanding an existing virtual hard drive has always been a problem for both Microsoft and VMware VMs. VHD Resizer can expand and shrink Microsoft's VHD files. It's also able to convert between Fixed and Dynamic file types. VHD Resizer is found at vmtoolkit.com/files/folders/converters/entry87.aspx.

2 **VMmark**—Does it seem like VMware has too many entries in this list? It's no wonder they're the market leader in virtualization. VMmark is another powerful and free tool; this one lets you benchmark applications running in VMware VMs. You can find VMmark at www.vmware.com/products/vmmark.

1 **Virtual Machine Remote Control Client Plus**—VMRCplus lets you manage, configure, and connect to Microsoft VMs. Unlike Virtual Server, VMRCplus doesn't require Microsoft IIS. VMRCplus can manage up to 32 VMs. You can download the Microsoft VMRCplus client from www.microsoft.com/downloads/details.aspx?FamilyID=80adc08c-bfc6-4c3a-b4f1-772f550ae791.

InstantDoc ID 98015

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Readers Review HOT PRODUCTS

At a Glance

AppDev Microsoft SQL Server 2005 and Java Training CDs 78
Unitrends Data Protection Unit and Data Protection Vault 79
Ensim Unify Enterprise Edition 1.5 84

IT Training Resources

AppDev Microsoft SQL Server 2005 and Java Training CDs

Reader:
Dennis Podgorski
IT Manager
Product:
AppDev Microsoft SQL Server 2005 and Java Training Programs
Company:
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Contact:
www.appdev.com

—Dennis Podgorski, IT manager

I use SQL Server 2005 at work, and I wanted to keep my skills updated, but without having to travel or leave my job to do so. My company will soon be upgrading a membership management system that is based on SQL Server, and we're also planning to move from Crystal Reports to SQL Reporting Services in the near future. I also wanted to learn how to program in Java, mainly to understand and customize the Alfresco Content Management system and the Zimbra Collaboration Suite (open source edition).

I first heard about AppDev and their **Microsoft SQL Server 2005 and Java training programs** either from a direct mail piece, or perhaps from seeing an AppDev ad in Windows IT Pro. I checked out the AppDev Web site, and saw that AppDev's training products weren't that expensive, and I liked that I could sample the products before purchasing. I considered attending an offsite training program as an alternative to AppDev's training products, but that just wasn't an option in our small work environment.

The AppDev CDs are well organized and I was able to get to sections I needed quickly. I also liked being able to refresh my understanding of complicated topics by watching the relevant sessions again if I needed to. After using both the SQL Server 2005 and Java training programs, I managed to learn what I needed to—all without having to be away from office, and it didn't cost me my entire training budget to do it.

There are some things that AppDev could improve upon. I'd like to see them adopt a monthly (or yearly) subscription program, where I could just learn the latest and greatest information without having to buy another training program, possibly similar to the way that the Lynda.com training site does. I'd imagine that a subscription would be cheaper in the long run as well. I did lose my installation key at one point, but my AppDev account rep quickly provided it to me without any questions or complaints.

What's Hot continues on page 79

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Disaster Recovery Tools

Unitrends Data Protection Unit and Data Protection Vault

Reader:
Cameron Sauce
Operations Manager

Product:
Unitrends Data Protection Unit and Data Protection Vault

Company:
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Contact:
www.unitrends.com

Our company was looking for a more reliable disaster recovery tool, since our existing tape backup solution was inefficient, and our backups couldn't be validated. We also were worried about files being lost due to system errors or natural disasters. Our customers need access to documents quickly, whether they need the files for auditing, compliance or other business use. Tape couldn't provide the time to recovery our customers needed, so it was time to start thinking about disk-based backup solutions.

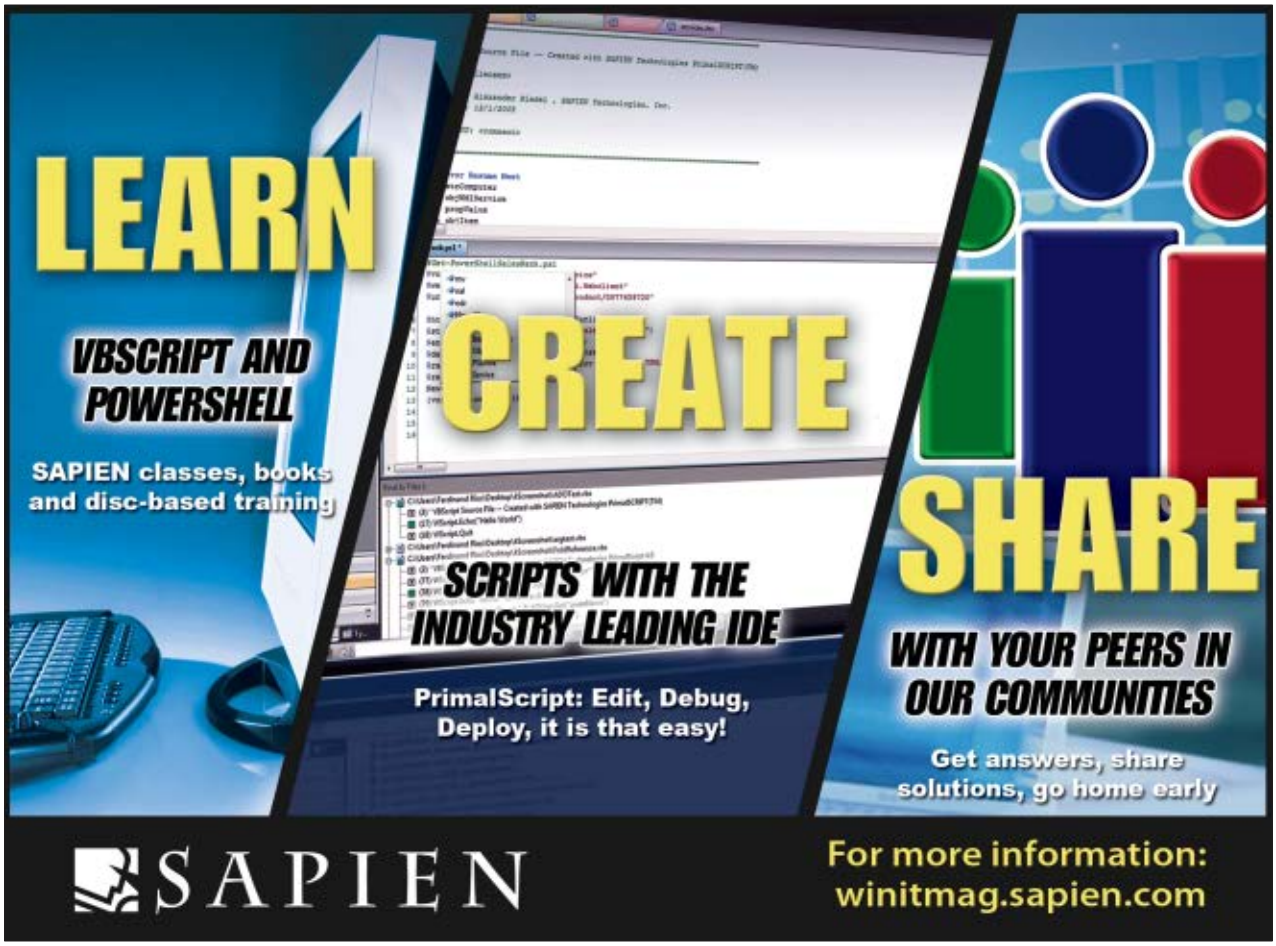
After investigating several other disk-based backup options, we decided on a **Unitrends Data Protection Unit (DPU)**. The Unitrends architecture ensures that data never leaves the backup environment, and the Unitrends management GUI simplifies the backup process. For added disaster recovery protection, we also decided to go with a **Unitrends Data Protection Vault (DPV)**, which allowed us to replicate data to a climate-controlled, fire-proof vault that is stored off-site. The DPV is protected by surveillance and security software, and has its own generators in case of a power outage.

We've found that the Unitrends backup solution is well-suited to our business model. It enables our new disaster recovery service, and protects our customers' business documents. It has added value to what we're able to offer, improves our customer service and helps us position our company as a trusted technology advisor.

We haven't had many issues with the Unitrends DPU, although we've occasionally experienced a failed backup or a scheduling issue, probably due to a job purging process not completing. These issues are likely due to the storage capacity of the DPU unit itself—we've outgrown the available space on the unit.

We were impressed with the Unitrends product and realized that we could market a new service to our customers. It's not often that a company's disaster recovery solution contributes to revenue, but that's exactly what Unitrends did for us.

What's Hot continues on page 84



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Active Directory Management

Ensim Unify Enterprise Edition 1.5

Reader:
Francis Marquez
IT Support Specialist

Product:
Ensim Unify Enterprise Edition 1.5

Company:
Ensim

Contact:
www.ensim.com

Our IT department had been looking for an application that would simplify Active Directory (AD) management—ideally through a central Web-based management console—and we began searching for a solution that could do what we need. I came across a magazine advertisement for **Ensim Unify Enterprise Edition 1.5**, and we decided to give the product a try.

Installation of Ensim Unify was very easy and straightforward: By far, it featured one of the easiest and smoothest installation processes I've seen when installing to a server OS. We immediately put Ensim Unify to work, and several features stood out for us as being the most significant.

It's very easy to create new AD users thanks to the User Template function, and the distribution list management feature has been very useful. Ensim Unify also offers extensive security group management as well. After we installed and launched the software, a single mouse-click populated all of our security groups into a very user-friendly, very readable format.

My only gripes with the product deal more with the licensing structure than the product itself. For example, I was unable to get the activation tool to communicate with their licensing server. The end result was to make an exception in our firewall specifically to a certain port and IP specific rule. It would also be nice if the program could populate the distribution lists for Exchange in the same way that it does for the AD security groups, but that may be more of a Windows shortcoming than something that Ensim Unify could do.

"Ensim Unify also offers extensive security group management as well. After we installed and launched the software, a single mouse-click populated all of our security groups into a very user-friendly, very readable format."

—Francis Marquez, IT support specialist

I've also found that the Ensim support staff and sales team are some of the nicest and most courteous people I've come across in this industry—they've been very helpful and knowledgeable.

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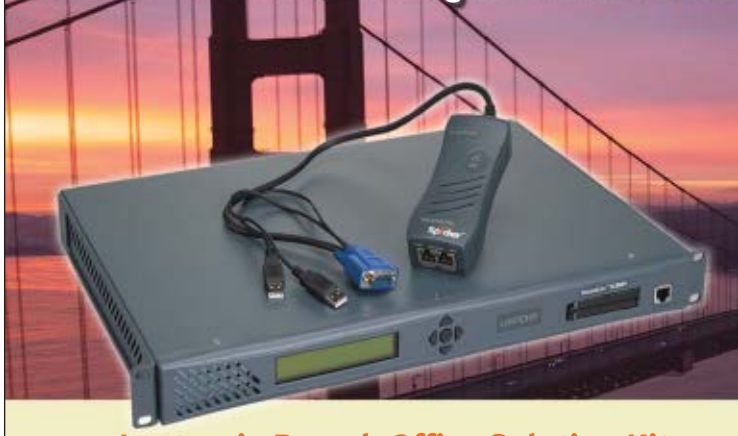

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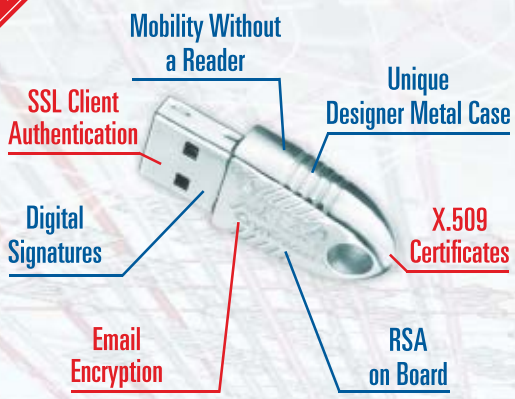

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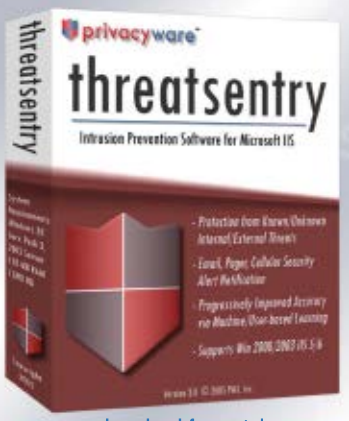

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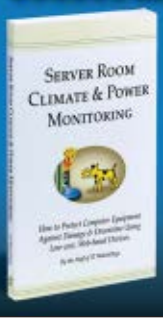

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Symantec www.symantec.com	24B
Unisys Corporation www.unisys.com	48B
Windows Connections www.WinConnections.com	24
Windows IT Pro www.windowsitpro.com	63, 64, 74, 86
World Data Products www.whybuyrefurbished.com	86

VENDOR DIRECTORY

The following vendors or their products are mentioned in this issue of *Windows IT Pro* on the pages listed below.

Adobe 20
AjaxI3 20
AppDev 78
Apple 17
Beyond Trust 26
Comodo 56
Corel 19
Coventi 20
Ensim 84
Falconstor Software 15
Google 19
Harvard Graphics 19
IBM 19
Instacoll 20
LANdesk 16
NetIQ 25
NetPro 27
NetWrix 15
Norton 52
O&O Software 17
Odyssey Software 16
OpenOffice.org 22
Runtime Software 54
Savision 15
SDM Software 27
Silveroffice 20
Software Garden 20
Special Operations Software (Specops) 18, 26
Sun Microsystems 23
SysInternals 54
Team and Concept 20
Techsoft 15
ThinkFree 20
Transmedia 20
TrimPath 20
Unitrends 79
VMware 77
Zoho 20

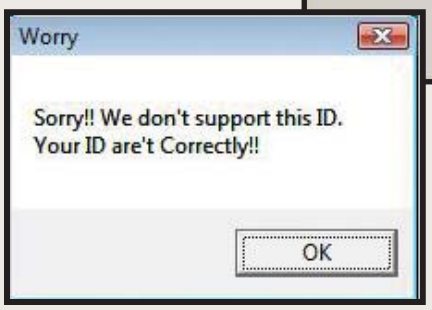
SEND US YOUR INDUSTRY HUMOR! Email your funny screenshots, favorite end-user moments, and humorous IT-related pics to rumors@windowsitpro.com. If we use your submission, you'll receive a Ctrl+Alt+Del coffee mug.

PATIENCE ...Is a Virtue

Conundrum

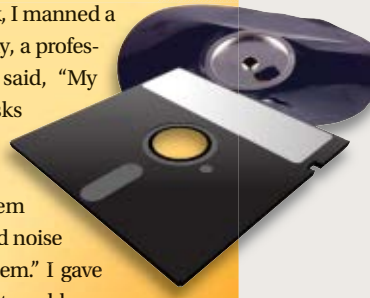
Communication alliteration

STOP CLICKING!



Yes, I AM worried

User Moment of the Month



In the days of the 5.25" floppy disk, I manned a Help desk at a university. One day, a professor called and said, "My Lotus 123 disks aren't any good. The computer won't read them and makes a loud noise when I insert them." I gave him a second set, and he experienced the same problem. I asked him to bring the disks in so that I could try them on a lab computer. As he opened his briefcase, he said, "Why do manufacturers make it so hard to remove the wrapping?" I stared in amazement. He had popped the welding rivets off each floppy disk and removed the square plastic protector sleeves. He was handing over a wobbly stack of round, floppy plastic discs.

—Dean Edwards

The IT Pro at Home!

What do you do after a long day at the office tinkering with systems and dealing with end-users? We're willing to bet you go home and do the same thing! You tinker with your home-networking setup, share media files across your systems, and solve the problems your family members are having with their satellite systems. You've got a connected home, and you probably use many of the same solutions there as you do at work. That's where *Connected Home Media* (www.connectedhomemag.com) can help. You're not only the IT Pro at work—you're the IT Pro at home! Sign up for the free *Connected Home Express* newsletter (www.windowsitpro.com/email) and get your tips about media sharing, home-network security, backup and recovery, home theater, and more!

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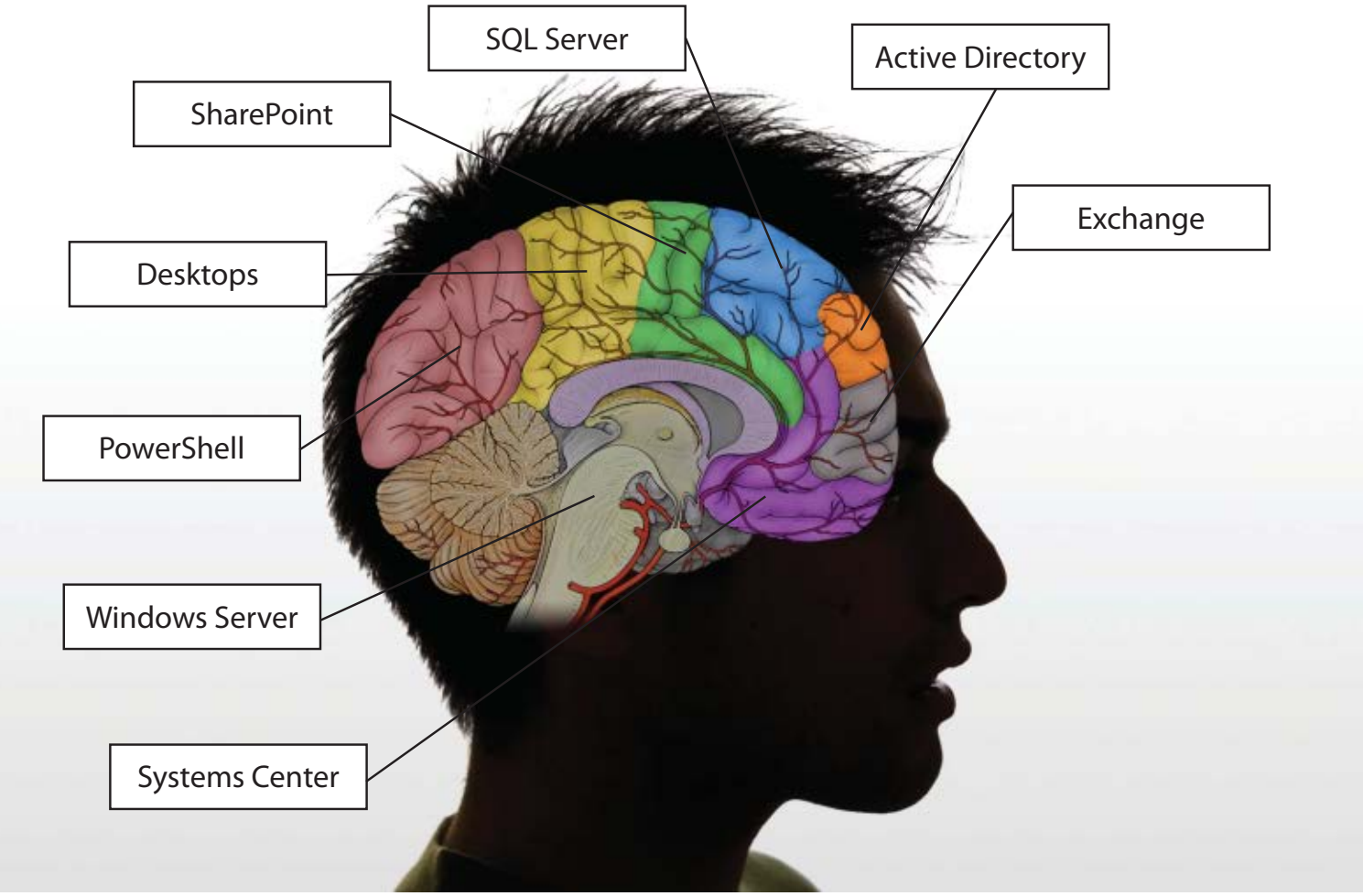

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